SOCIAL CAPITAL AND INSTITUTIONAL TRANSITION: REGIONAL CONTEXT FOR NETWORK USE IN JOB SEARCH IN RUSSIA, 1985-2001

by

Olga Vladislavovna Mayorova

A Dissertation Submitted to the Faculty of the DEPARTMENT OF SOCIOLOGY
In Partial Fulfillment of the Requirements For the Degree of DOCTOR OF PHILOSOPHY

In the Graduate College
THE UNIVERSITY OF ARIZONA

2008
As members of the Dissertation Committee, we certify that we have read the dissertation prepared by Olga Vladislavovna Mayorova entitled Social Capital and Institutional Transition: Regional Context for Network Use in Job Search in Russia, 1985-2001 and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

Ronald L. Breiger
Date: 11/14/08

Jane R. Zavisca
Date: 11/14/08

Erin Leahey
Date: 11/14/08

Theodore P. Gerber
Date: 11/14/08

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copies of the dissertation to the Graduate College. I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Ronald L. Breiger
Dissertation Director
Date: 11/14/08

Jane R. Zavisca
Dissertation Director
Date: 11/14/08
STATEMENT BY AUTHOR

This dissertation has been submitted in partial fulfillment of requirements for an advanced degree at the University of Arizona and is deposited in the University Library to be made available to borrowers under rules of Library.

Brief quotations from this dissertation are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his or her judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED: Olga Vladislavovna Mayorova
ACKNOWLEDGEMENTS

I wish to express my deep gratitude to the co-chairs of my dissertation committee Ronald Breiger and Jane Zavisca. I owe much to Ron for his insightful advice, encouragement, and invaluable support during my years in graduate school and also for generously sharing his vast expertise in social network analysis both in the classroom and through discussions of my research. I am especially grateful to Jane, whose help proved indispensable for the successful completion of my doctoral studies; her careful reading of multiple drafts of this dissertation and her detailed comments on my writing improved my work immensely.

I am much indebted to Theodore Gerber for his mentorship and expertise, both of which shaped me as a researcher. I am particularly thankful that he graciously provided the SSMDR data set for this dissertation. I express my sincere appreciation to Erin Leahey for her helpful suggestions in the preparation of this thesis.

I was very fortunate to have as a mentor Joseph Galaskiewicz, who very generously shared his ample expertise in social network analysis and organizational studies. I am grateful to Miller McPherson, as well, for giving me the opportunity to attend his classes—classes in which I found inspiration for this dissertation. I further extend my gratitude to the faculty of the Department of Sociology at the University of Arizona for the knowledge and skills I acquired in their classes.

I thank Allen J. Whitt, my master’s program advisor, for introducing me to social network analysis and Vitaly Kerzhentsev, my undergraduate advisor, for introducing me the science of sociology.

My thanks also go to my classmates for their friendship and support. I gratefully acknowledge the financial assistance I received from the Department of Sociology and the Department of Geography and Regional Development at the University of Arizona. I also appreciate the National Science Foundation’s funding of the SSMDR data collection. Special thanks go to Camille Nelson for her invaluable help in preparation and careful editing of this dissertation.

I deeply appreciate the encouragement and support I received and continue to receive from my family and friends. I am especially grateful to my parents Maria and Vladislav for their many sacrifices and their dedication to my professional career and personal happiness. I also thank my husband Alexander. I cherish his deep devotion and his strong faith in me.
TABLE OF CONTENTS

LIST OF TABLES ............................................................................................................ 7
LIST OF FIGURES .......................................................................................................... 8
ABSTRACT ....................................................................................................................... 9
INTRODUCTION ........................................................................................................... 11
CHAPTER 1. SOCIAL NETWORKS AND THE LABOR MARKET ..................... 22
  Sociological and Economic Theories of Income Differential.......................... 22
  The Role of Social Ties in the Labor Market .................................................... 27
  Macro-Level Context for Network Use in the Labor Market ....................... 38
  Key Economic and Institutional Factors Influencing the Use of Networks in Job
  Search ...................................................................................................................... 41
  Research Design ..................................................................................................... 44
  Summary .................................................................................................................. 47
CHAPTER 2. PERSONAL NETWORKS AND LABOR MARKET IN RUSSIA... 48
  Personal Networks in the Labor Markets of State and Market Economies ...... 48
  Russia’s Economy up to and after 1991 ............................................................... 52
  Russia’s Labor Market during the Soviet Period ............................................. 53
  Russia’s Labor Market during the Transition to a Market-Based Economy ..... 58
  Personal Networks in the Labor Market in Russia before and since Reforms... 62
  Theories Explaining Growing Network Significance in Russia ..................... 67
    Networks as Soviet Legacy .................................................................................. 68
    Networks as a Response to Institutional Change ............................................ 76
  Regional Factors and the Use of Social Networks in Job Search.................... 78
    Social Capitalism ............................................................................................... 81
    Networks and Economic Depression ............................................................. 88
    Networks Filling Institutional Vacuum ............................................................ 90
  Regional Factors and Effect of Network Use in Job Search on Search Outcomes91
  Summary ................................................................................................................ 93
CHAPTER 3. RESEARCH METHOD AND DATA DESCRIPTION ...................... 95
  Data ........................................................................................................................... 95
    Job History Data ............................................................................................... 96
    Regional Data ..................................................................................................... 99
  Hierarchical Models ............................................................................................. 101
  Variables ............................................................................................................... 106
    Dependent Variables ....................................................................................... 107
    Level-1 Independent Variables .................................................................. 108
    Level-2 Independent Variables .................................................................. 112
  Summary .............................................................................................................. 114
CHAPTER 4. REGIONAL CONTEXT AND TEMPORAL DYNAMICS IN THE
  USE OF PERSONAL TIES IN JOB SEARCH ...................................................... 115
  Hypotheses ............................................................................................................ 115
  Results .................................................................................................................... 122
CHAPTER 5. INFLUENCE OF THE REGIONAL ECONOMY ON THE SECTOR AND SIZE OF WORK PLACES FOUND THROUGH NETWORKS ........................................... 136

Hypotheses ................................................................................................................. 137
Private Sector Analysis ............................................................................................. 142
Work Place Size Analysis .......................................................................................... 153
Summary .................................................................................................................... 156

CHAPTER 6. REGIONAL ECONOMY AND WAGE RETURNS TO FINDING A JOB THROUGH NETWORKS ................................................................. 158

Hypotheses ................................................................................................................. 158
Results ........................................................................................................................ 160
Summary .................................................................................................................... 168

CONCLUSION .............................................................................................................. 173

Findings and Methodological Issues ........................................................................ 174
Discussion ................................................................................................................. 179

APPENDIX A. SSMDR QUESTIONNAIRE ............................................................. 182

APPENDIX B. PRINCIPAL COMPONENT ANALYSIS RESULTS .................... 199

REFERENCES .............................................................................................................. 200
LIST OF TABLES

Table 3.1. Summary of Variable Coding.........................................................110
Table 4.1. Descriptive Statistics.................................................................121
Table 4.2. Binomial Regression Models with Crossed Random Effects and Job Level Controls for Job Search Method.........................................................126
Table 4.3. Hierarchical Cross-Classified Binomial Regression: Specifying Longitudinal Fixed Effects for Method of Job Search...........................................130
Table 4.4. Hierarchical Cross-Classified Binomial Regression: Specifying Regional Fixed Effects for a New Job Found through Networks.........................................134
Table 5.1. Descriptive Statistics for Sector and Work Place Size Analyses..........144
Table 5.2. Cross-Classified Random Effect Models for Getting a New Job in the Private Sector..............................................................................................147
Table 5.3. Cross-Classified Random Effect Models for the Natural Log of Work Place Size........................................................................................................157
Table 6.1. Descriptive Statistics for Sector and Work Place Size Analyses..........162
Table 6.2. Hierarchical Linear Regression for Logged Wages............................170
Table 6.3. Hierarchical Linear Regression for Logged Wages: Selecting Final Model..172
LIST OF FIGURES

Figure 2.1. Percentage of Jobs Found through Personal Networks, Russia, 1985-2001...65
Figure 2.2. Relationship between Macro-Level Context and Finding a Job through
Personal Networks.............................................................................................79
Figure 2.3. Percentage of Employed in the Private Sector for Russia's Regions,
1985-2001........................................................................................................81
Figure 2.4. Percentage of Workers Employed by Small Business for Russia's Regions,
1985-2001........................................................................................................85
Figure 2.5. Unemployment Rate for Russia's Regions, 1985-2001.......................87
Figure 2.6. Mean Reported Monthly Wages in Constant 1985 Rubles for Russia's
Regions, 1985-2001..........................................................................................89
Figure 2.7. Relationship between Network Use and Stratification Outcomes............92
Figure 3.1. A New Job is Nested within Region and Year.................................102
Figure 4.1. Expected Probabilities of Finding a Job through Personal Networks by Year
Holding Job-Level Characteristics at Their Mean Values and Random Effects
at Zero...............................................................................................................131
Figure 5.1. Expected Probability That a New Job Found through Personal Networks Is
in the Private Sector by Regional Economic Performance............................152
ABSTRACT

Current research on network use in the labor market focuses primarily on network morphology. In this dissertation, I use hierarchical regression to examine the influence of macro-level context on network use in job search.

This study relies on a unique data set that combines individual job history data for years 1985 through 2001 collected by the Survey of Social Dynamics and Migration in Russia (SSMDR) in 40 regions in 2001-2002 and corresponding regional macro-economic data published by Goskomstat, the State Statistical Committee of the Russian Federation.

The first question of this study focuses on what accounts for the temporal and regional variation in personal network use in the Russian labor market. I find that, for the post-Soviet period, increase in network use in job search can be attributed to the growth of the private sector: Russian employers are becoming “social capitalists” who take advantage of the resources personal connections can offer. I also find that the chances of finding a new job through personal ties are higher in the regions with larger small business sectors and in the regions with lower economic performance.

Next I examine how regional economic performance and unemployment affect workers’ chances of getting new jobs in the private sector and in smaller size organizations by means of personal networks. The analysis shows that social networks do lead to employment in the private sector and that this relationship is positively affected by regional economic performance, but not by unemployment rate. I also find here that social ties are likely to lead to new jobs in small organizations, but that this relationship
does not vary by region. Finally, I investigate how regional economic performance and unemployment rates affect wages for jobs found through personal networks in the private sector and in small organizations. I find that while the private sector rewards network use, small organizations do not. The relationship between network use and wages does not vary by region. That is, regional economic performance does not have an effect on this relationship.
INTRODUCTION

The concept of social capital has become the focus of many studies since the 1970s. It has been applied in various areas of social research such as status attainment (Bian 1997; Burt 1998; De Graaf and Flap 1988; Lin 1999; Montgomery 1992), immigration (Liang 1994a; Sanders and Nee 1996; Sanders, Nee, and Sernau 2002), health (Holtgrave and Crosby 2004; Veenstra, Luginaah, Wakefield, Birch, Eyles, and Elliott 2005; Weitzman and Chen 2005), civil activities (Paxton 2002; Putnam 2000; Saxton and Benson 2005), and economic activities (Renzulli, Aldrich, and Moody 2000; Uzzi 1997; Uzzi 1999). The social capital concept has also become very important to the study of labor markets. Differentials in access to social capital have been viewed as a source of inequality in labor markets (Lin 1999). Since Granovetter’s groundbreaking research on personal contacts and careers (1974), a number of scholars interested in the job matching process have turned their attention to the role social contacts play in labor market activities.

With some variation in findings, approximately every other job is found through personal ties in the United States (Berger 1995; Bridges and Villemmez 1986; Corcoran, Datcher, and Duncan 1980; Elliot 1999; Falcon 1994; Granovetter 1974; Green, Tigges, and Browne 1995; Lin, Ensel, and Vaughn 1981; Marsden and Hurlbert 1988; Myers and Schultz 1951; Ornstein 1976; Staiger 1990). Informal methods of job search are also widespread in other countries with a variety of economic and political systems such as Sweden, Germany, Japan, Denmark, China, Russia, Israel, Canada, and Britain (Alon and
Throughout these diverse nations, the use of networks in obtaining a job has been related positively to status attainment outcomes such as earnings, occupational prestige, job duration, and job satisfaction (Campbell and Rosenfeld 1985; De Graaf and Flap 1988; Green, Tigges, and Browne 1995; Hsung, Chow, and Chen 1998; Korenman and Turner. 1996; Lin, Ye, and Chen 1997; Simon and Warner 1992).

The theoretical framework for research on the role of social ties in labor market activities, however, is almost entirely concentrated at the micro-level on what Marsden and Gorman termed “network morphology” (2001:471). That is, existing research focuses on the structural characteristics of the personal ties that provide workers with job information. For example, Granovetter (1974) looks at the strength of ties and argues that weaker ties provide more diverse information and tend to connect job seekers directly to employers. Burt (1992) argues that the density of one’s networks plays a role in occupational success and that networks rich in structural holes provide one with informational and control benefits necessary for successful career. Others suggest that larger and more diverse networks produce positive labor market outcomes (Campbell, Marsden, and Hurlbert 1986; Podolny and Baron 1997). Lin (1982; 1990; 1999; 2001) looks directly at the social status of workers’ contacts. He argues that higher social status of one’s contact indicates that greater resources can be reached when the contact is used to find a job.
At the same time, a number of scholars have observed that countries vary in their levels of network use in job search and in the stratification outcomes associated with such use. They suggest that differences at the macro-level, such as differences in the institutional arrangements of labor market activities, may be responsible for such variation. De Graaf and Flap (1988), for example, found lower levels of personal network use in West Germany and the Netherlands than in the United States and attributed this difference to a higher level of bureaucratization of the firms and hiring procedures in the two European countries. Korpi (2001) found lower levels of personal network use by unemployed persons in Sweden than in the United States and explained his findings by citing greater access to jobs through public employment agencies in Sweden. Watanabe (1987) in Japan and Bian (1997) in China found that stronger ties are used more often for job search than in the United States due to longer tenure and greater a need for personal trust in these countries compared to in the United States. Other authors focused their research on the effects of macro-economic conditions on network use within a single country and found that industry growth and decline, economic recession, and rising levels of unemployment may all have an effect on the use of networks in job search (Brown 2000; Jenkins, Bryman, Ford, Keil, and Beardsworth 1983; Wial 1991; Wood 1985).

Despite the growing evidence that macro-level context has a significant impact on the way social capital works in the labor market, researchers on social capital and job search rarely conduct direct empirical tests of how the macro-level context in which job searches take place influences the likelihood of network use in job search and the effect of network use in job search on stratification outcomes across a large number of higher
level units (for example, districts, industries, states, and countries). The primary objective of this dissertation, therefore, is to fill the gap in social capital research by answering the question of how the regional conditions in which labor markets operate influence both the use of personal ties in job search and the labor market outcomes associated with network use in job search. To achieve this objective, I develop a theoretical framework with a focus on the macro-level embeddedness of social capital use and then test a set of hypotheses about the effect of macro-economic and institutional factors on network use in job search in a systematic way on a large sample of macro-level units.

In this study, I assume that the method of matching jobs to applicants is mostly driven by the demand side of the labor market—that is, by the employers’ needs and the constraints they have to face rather than by job seekers’ preferences. In market economies, the markets are typically loose: there are more workers than jobs. This means employers tend to have the upper hand in choosing recruitment methods. If employers for any reason prefer to search for qualified workers through networks, then this search method will lead to better jobs being found by individuals with richer social resources. A prospective worker may prefer to search for a job using advertisements or employment agencies; however, advertisements and employment agencies will not have the information on better jobs, if employers do not channel information about better jobs through them. Conversely, a person may have ties to a large number of people who potentially may have information on top quality vacancies. But if employers distribute

---

1 See Brown (2000) for an exception to the rule.
information about jobs through advertisements and employment agencies, have strictly formalized procedures for the submission and evaluation of job applications and/or discourage third parties from putting in a good word for a job candidate, the use of social ties may be neither welcome nor useful. If it is the employers’ choices that determine the prevailing recruitment methods, it is reasonable to suggest that the process linking macro-level conditions to the method of search through which an individual finds a job is mediated above all by the way macro-economic context influences employers’ choices of methods of search for qualified job applicants. That is, when it comes to the effect of macro-level factors on the use of networks in job search, the primary theoretical interest lies in explaining the way these factors affect employers’ choices.

I use 1985 to 2001 employment histories for respondents of the Survey of Social Dynamic and Migration in Russia (SSMDR) conducted by the All-Russian Center for Public Opinion Research (VCIOM) in three waves in 2001 and 2002 as well as economic statistics published by Goskomstat for Russia’s regions for years 1985 through 2001. These data allow me to account for the macro-level embeddedness of social network use in the Russian labor market not only by examining the spatial (regional) variation in network use, but also by investigating the temporal dynamics of network use. Students of labor markets have long critiqued economic studies for the assumption of spatial homogeneity (Clark, Gertle, and Whiteman 1986) and lack of attention to historical context (Mizruchi, Stearns, and Marquis 2006). My dissertation project addresses both of these concerns in a comprehensive way.
An investigation of the dynamic processes of social capital use in Russia is also an interesting and important task because the institutional and economic changes experienced by the country during the transition from a centrally planned economy to a market-based economy were accompanied by a noticeable increase in the proportion of jobs found through network ties (Clarke 1999; Clarke 2000; Gerber and Mayorova 2007; Yakubovich and Kozina 2000). The use of networks almost doubled, causing some scholars to predict a full closure of the Russian labor market where jobs are found exclusively through personal connections in the near future (Clarke 2000). A number of explanations have been proposed to account for increased reliance on network ties in job search. The second objective of this dissertation project is to develop a theoretical framework and contribute new empirical findings to the debate on the causes of increased social network use in the Russian labor market during the post-Soviet period.

Three major theoretical approaches have evolved in the existing research on social networks in the Russian labor market. The Soviet legacy approach explains that the current dynamics of social network use in the labor market are a remnant of the Soviet economic relationships of managerial patronage that has been adapted to the new economic conditions (Clarke 1999; Clarke 2000). The “institutional vacuum” approach explains the growing significance of personal ties in the labor market by increased institutional uncertainty that is characteristic of the transitional period when the institutions of the centrally planned economy are no longer applicable, but the institutions of the market economy are not yet fully developed (Yakubovich 2001; Yakubovich and Kozina 2000). In this dissertation, I argue in favor of the social capitalism approach. I
build my framework on two ideas. First, employers in market economies are “social capitalists” (Fernandez, Castilla, and Moore 2000, p. 1289) who take advantage of their employees’ personal connections to save on hiring costs and reduce the risks associated with hiring new workers. Second, growth of personal network use in the Russian labor market is related to the increased proportion of private employers who face hard budget constraints, unlike employers in the public sector (Gerber and Mayorova 2007), and thus have to rely on personal ties when searching for workers to make hiring process cost-effective.

Building on these two ideas, I argue that Russian employers are not trying to retain the old patronage system based on personal relationships when they hire through personal networks and that the increase in network use is unlikely to disappear when Russia’s institutional vacuum is filled with well developed market-based institutions. Instead, Russian employers are learning to be “social capitalists” who take advantage of the resources their own personal connections and their employees’ personal connections can offer to deal with the macro-economic and institutional changes taking place in modern Russia. The higher level of personal network use in the Russian labor market is not likely to disappear, nor is it likely to grow into a full closure of the labor market. The dynamics of network use in the labor market, I argue, depend on the growth of the private and small business sector because private and smaller size employers are faced with greater financial constraints and have to use networks as the cheapest, but the best means of finding qualified workers. I also argue that changes in economic performance and
unemployment rates affect network use in job search because both of these macro-economic indicators change the financial constraints and risks faced by employers.

Three sets of analyses are presented in this dissertation. The first—and main—question of this study is what accounts for the temporal and regional variation in the personal network use in the Russian labor market from 1985 to 2001? The second question is how do regional economic performance and regional unemployment affect workers’ chances of getting through personal networks jobs in the private sector and in smaller size organizations? Finally, I investigate how regional economic performance and unemployment affect wages for jobs found through personal networks in the private sector and in smaller size organizations.

Chapter 1 provides an overview of the theories and empirical research pertaining to social network use in the labor market. I argue that more attention has to be paid to the macro-level context in which social networks operate. I review some major economic and institutional factors that have been discussed in the literature as important determinants of the use of networks in the labor market, but have not yet been systematically researched across a large number of macro-level units.

In Chapter 2, I provide background information on Russia’s economy both under the conditions of centrally planned Soviet economy and under the conditions of the post-Soviet transition to a market-based economy. I also discuss the role social networks played in economic activities in Russia during the Soviet period and some of the current theories that purport to explain the consistently growing role of networks with respect to job mobility during market reforms. Research on social networks in Russia tends to see
social networks as the legacy of the old economic and political system. I, however, argue that current macro-level changes in the economy are responsible for the growing significance of personal ties in the Russian labor market. In 1992, the Russian economy experienced a deep recession with falling incomes and growing unemployment, as well as drastic institutional changes accompanied by rapid growth of the private and small business sectors. All of these factors, I argue, could have been the cause of both the increased reliance of employers on social ties in filling vacancies and the strengthening of the positive relationship between finding a job through personal ties and stratification outcomes.

Chapter 3 describes the data sets, statistical methods, and variables I use to test competing hypotheses about the influences of macro-level factors on network use in the labor market and the consequences of network use. To test hypotheses about contextual effects on network use in the Russian labor market and on the consequences of network use on stratification outcomes, I combine job-history data from the Survey of Stratification and Migration Dynamics in Russia and regional economic data by Goskomstat for the years 1985 through 2001. I model temporal and regional effects by means of cross-classified hierarchical regression. Hierarchical models (also known as multilevel or mixed-effects models) are the best suited models for contextual quantitative analysis since they allow an estimation of the effects of both individual and contextual-level variables on the individual-level outcomes, as well as an estimation of the effect of contextual-level variables on the effects of individual-level variables.
In Chapter 4, I test the theories, explaining the increase in the significance of network ties in the Russian labor market since the beginning of market reforms. The dependent variable in all of the models discussed in this chapter is a binary variable measuring whether a new job was found through social ties (relatives, friends, or acquaintances) versus other means. I use hierarchical binomial regression to test the models. I begin by modeling job-level controls and then proceed to modeling temporal and regional fixed effects. Examining the temporal pattern of increasing significance of social ties in job search, I find no support for the institutional vacuum approach or the Soviet legacy approach: the post-Soviet increase in the chances of finding a job through personal connections can be explained by the growth of the private sector as suggested by the social capitalism perspective. At the regional level, I find that new jobs are found through personal ties more often in regions with larger small business sectors and in regions with poor economic performance.

Chapter 5 attempts to find an answer to the question of how the regional context affects one’s chances of finding through social ties a new job in the private sector and in the smaller size organizations. The method through which a new job was found is no longer the dependent variable. Here it is a determinant of labor market outcomes such as the sector and the size of the new work place. The analysis shows that social networks do lead to employment in the private sector. This relationship is positively affected by regional economic performance, but not by the region’s unemployment rate. Social ties also lead to jobs in smaller organizations than do other methods of search, but I find that
this relationship is affected by neither regional economic performance nor unemployment.

In chapter 6, I explore the effect of the regional economy on the link between personal network use in job search and stratification outcomes such as wages for jobs found in the private sector and for jobs found in smaller size organizations. I find that the private sector pays higher wages than the public sector and that even higher wages are paid if a new job in the private sector is found through personal ties. Smaller organizations pay lower wages than larger organizations. Neither smaller nor larger organizations pay higher wages when a job is found through personal networks. Regional economic performance affects wages positively, while unemployment does not have an effect on wages. Returns to network use in the private sector and small size organizations do not vary by region in this data set.

In the final chapter, I summarize the findings and contribution of this project to research on social network use in the labor market, discuss the limitations of my research design, and make suggestions for future studies of social network use in the labor market.
CHAPTER 1. SOCIAL NETWORKS AND THE LABOR MARKET

This chapter provides an overview of the theories and empirical research that explain how social networks work in the labor market. I critique current studies for neglecting to consider macro-level context in which job search takes place and discuss some major economic and institutional factors that previous research suggests may influence personal network use in job search. Finally, I provide a brief description of my research design and the data sets used in this study.

Sociological and Economic Theories of Income Differential

Income differential has long been a focus of sociological inquiry. In industrialized countries, the major arena for income distribution is the labor market. Consequently, stratification studies in industrialized countries have focused on workers and jobs. Both sociological theory and economic theory have offered explanations for existing disparities in earned income. However, the two disciplines take decidedly different approaches in their analysis of workers and jobs. In sociology, the focus traditionally has been on individuals’ origins and educational achievement; in economics, attention has been paid to worker productivity, the pricing of labor, and the demand side of the labor market.

Sociological approaches to income differential have long been dominated by the status attainment perspective. Both the now-classical work by Blau and Duncan on occupational structure (Blau and Duncan 1967, Chapter 3) and the Wisconsin model
(Sewell and Hauser 1975) gave rise to numerous empirical studies of occupational and income attainment. The status attainment perspective claims that differences in occupational status and income are caused by differences in family background, individual ability, and educational achievement. It relies heavily on techniques of path analysis and structural equation modeling. Decomposition of the direct and indirect effects of a variety of individual characteristics on occupational status or income enables status attainment researchers to address the question of how a person’s resources and characteristics are converted into socio-economic status.

Economists, who have often criticized the status attainment perspective for being too empirically driven, advanced alternate theories. One of the prominent economic theories of wage differentials among individuals is human capital theory (Becker 1962; 1964; Mincer 1958; Schultz 1960; Schultz 1961). Unlike sociologists, economists have grounded their ideas in the economic theory of wages (Hicks 1964). The main premise of human capital theory contends that employers reward workers’ productive capacity. Workers, as rational individuals, therefore maximize their earnings by investing in their own productive capacity. Investment in productive capacity is not limited to education; it also includes health maintenance, in-service training, migration, and information retrieval (Blaug 1976). Differences in earnings, according to this theory, are interpreted as differing returns on workers’ investments.

Human capital theory has its share of critics, however. Institutional economists have accused its proponents—as well as those of the status attainment perspective—of paying exclusive attention to the supply side of the labor market while ignoring the
demand side and the very structure of the jobs themselves. Dunlop (1957) emphasized a complex structure of wages both within firms and between them. He also established that, in order to find out why a certain job commands a certain wage, one must determine where that job fits in relation to other jobs, as well as to what job clusters around which key jobs it belongs. His research led Doeringer and Piore (1971) to develop a concept of the internal labor market. They argued that firms do not follow the laws of the market when dealing with labor, but rather the rules and procedures of a hierarchy. Wages in such firms are based on a job’s demands and on its position within the company hierarchy.

The internal labor market idea as it was initially conceived failed to provide an adequate account of the supply side of the labor market, however. Dual, or segmented, labor market theory attempts to correct for this flaw. According to this theory, the labor market is segmented into primary and secondary markets. The primary labor market provides workers with many of the advantages of the internal labor market – high skill, high wage jobs with built-in career ladders and opportunities for upward mobility. The secondary labor market comprises the low skill, low pay jobs with few opportunities for advancement and a high risk of layoffs. These occupations are typically held by the impoverished social groups, youth, ethnic minorities, immigrants, and women.

As this short review shows, economic theories have come to provide a comprehensive understanding of both the supply side and the demand side of the labor market. Such theories currently dominate the field of labor market research. However, the economic approach to labor markets has a flaw: it pays little attention to the process of
matching supply with demand (Granovetter 1981). Until the 1960s, economists felt little
need to explain the matching process because they assumed that market participants
(employees and employers) have perfect information about each other when they make
their choices. Early empirical findings provided evidence that information was not, in
fact, perfect and that, contrary to economists’ expectations, informal means of job search
accounted for a significant number of job finds (Rees 1966). At first, economists
attributed this situation to a lack of rationality in workers’ behavior. Later, however, the
neoclassical model was adapted to account for the imperfections of the information
available to market participants. To that end, Stigler (1961) formulated a general
economic approach to information. He described information as a scarce commodity, the
acquisition of which bears certain costs in time, effort, and/or money. As rational
maximizers, market participants are willing to invest in the acquisition of information
only if the costs of doing so do not outweigh the benefits of obtaining that information.

To analyze the dynamics of unemployment, then, economists have developed a
general model of sequential job search as conducted by rational workers (Devine and
Kiefer 1991; Lippman and McCall 1976; McCall 1970; Mortensen 1970; 1986). This
economic job search model rests on a number of important assumptions. Job searches
require time and effort. Thus, only the unemployed are able to search for jobs because
starting a job search would mean a potential loss of income to any employed worker. A
certain probability of receiving a job offer is attached to an unemployed person’s
searching for a job. There is a wage distribution from which job offers are drawn at
random. Should an unemployed person receive a job offer, he or she must then decide
whether to continue the search or to accept the offer. In this job search model, workers accept only offers that equal or exceed their reservation wage, which is derived from information about the frequency of job offers and the wage distribution. A worker’s reservation wage thus determines the lower limit on acceptable job offers. Later, the model was extended to include searches by employed workers, systematic search, and many other search situations (Mouw 1999).

Granovetter’s seminal work on job search (1974) provided a sociological critique of the economic model of job search. This major critique touches upon the model’s exclusive focus on search and unemployed workers. Granovetter argues that “it is often difficult to accept the implicit assertion that information results [only] from search” (Granovetter 1981). In his sample, almost every third job (about 30%) had been found without the individual’s having been involved in a job search process at all. Moreover, Granovetter notes, the majority of jobs (85%) were found through social ties. These jobs were also associated with higher income. Granovetter isolates two major reasons for his findings: (1) some employers search for workers through webs of personal ties and (2) information about jobs is embedded in social activities that are unrelated to the labor market.

In his later work, Granovetter developed the notion that economic activities, including labor market activities such as job search, are embedded in social relations—relations neither intended for nor related to economic transactions. In his critical essay

---

2 The importance of non-search was later confirmed by other studies in which the percentage of jobs acquired without active search varied depending on worker’s gender, ethnicity/race, occupation, and country, but remained significant in number. See review of job search literature by Granovetter (1995), as well as Marsden and Gorman (2001), for more information.
Economic Action and Social Structure: The Problem of Embeddedness, Granovetter (1985) argues that both economic theory and sociological research are flawed in their view of economic activities: the former has an under socialized conception of human behavior, and the latter has an over socialized conception of human behavior. As a result, each presents a picture of economic activity being conducted by atomized and completely independent individuals. In reality, Granovetter argues, all social actors are embedded in webs of concrete social relations (networks) that generate trust and social integration and serve as bases for economic transactions. Labor market information is best passed on through networks in situations in which two or more people interact for purposes other than economic exchange. Common settings for such encounters include parties; lunch or dinner engagements; and accidental meetings on the street, in coffee shops, or at mutual friends’ homes. Friends and acquaintances typically inquire about each other’s personal and professional lives during social interactions. This casual inquiry makes it possible for advice and information about job opportunities to be passed along unsolicited. It is reasonable, then, to speculate that different individuals have acquaintances with job information of varying quality and that this differential may be the key to the differential in occupational status and earnings.

The Role of Social Ties in the Labor Market

The idea that individuals receive job information through their social ties has been well received by the research community. Numerous studies have systematically investigated the importance of social ties in the matching of workers and jobs, subsequent to
Granovetter’s 1974 study. Studies of matching processes have traditionally compared a
variety of formal and informal methods of search. Formal methods of job search include
the use of institutional intermediaries such as advertisement, employment agencies, and
college placement offices. Informal methods have, in the past, included both social
contacts and direct application. Early studies by economists (Rees 1966) treated the two
as the same kind of search method, but current studies make a distinction between search
that involves informal intermediaries (that is, the use of social networks) and search that
does not (that is, direct application). Current studies regard as “informal methods of
search” only job searches conducted via personal ties such as ties to relatives, friends, and
acquaintances.

Although the “percentage of jobs found via personal ties” fairly consistently
hovers around 50-60% in U.S. studies (Berger 1995; Bridges and Villemez 1986;
Corcoran, Datcher, and Duncan 1980; Elliot 1999; Falcon 1994; Granovetter 1974;
Green, Tigges, and Browne 1995; Lin, Ensel, and Vaughn 1981; Marsden and Hurlbert
1988; Myers and Schultz 1951; Ornstein 1976; Staiger 1990), some variation in the
findings persists: some studies report significantly lower percentage, while others report
significantly higher percentage. For example, Ports (1993) in the study of unemployed
from the Current Population Survey reported that only about 25% of jobs were found
through networks. Gottfredson and Swatko (1979) and Holzer (1987), however, found
that around 80% of jobs were acquired through networks. Nevertheless, such drastic
deviations can be explained by the particularities of the samples used in the studies.
Explanations as to why social contacts are so important in matching workers with jobs
were given from both the supply and demand sides of the labor market. Labor market research from the demand side looks at the ways employers benefit from employee referrals as compared to other recruitment methods. Studies of firms as well as studies of individuals consistently show that about half of all job vacancies are filled through referrals (Campbell and Marsden 1990; Fernandez, Castilla, and Moore 2000; Holzer 1987; Kalleberg, Knoke, Marsden, and Spaeth 1996; Kirnan, Farley, and Geisinger 1989; Leicht and Marx 1997; Marsden 1994; Petersen, Saporta, and Seidel 2000). Researchers also agree that job seekers who utilize referrals have a greater chance of receiving job offers than do job seekers who use other search methods (Blau and Robins 1990; Fernandez and Weinberg 1997; Fernandez, Castilla, and Moore 2000; Holzer 1987; Petersen, Saporta, and Seidel 2000)\(^3\).

The economic literature argues that, because of imperfect information, employers face uncertainty when they evaluate the potential productivity of job candidates. Information acquisition, which can alleviate some of that uncertainty, comes with a cost to employers. Yet network ties may convey information about job candidates at no cost to employers. Moreover, information passed on through social networks is unique; it cannot be obtained through other means. The use of network ties may also promote a better match between jobs and workers because employers often see information about candidates’ qualifications that they receive through network ties as being of better quality and greater depth—and thus as more reliable—than information they receive through

\(^3\) Employers, of course, can intentionally avoid hiring through networks, but usually this only happens if they have had negative experiences with nepotism or tight cliques in the workplace (Rees 1966).
formal channels. This information intensifies the search (Rees 1966), as it may contain hard-to-get clues about various difficult-to-measure characteristics of the worker. Quality information about prospective employers which may be impossible to get anywhere else reaches job applicants through similar channels. As a result of receiving such rich information about each other, informally referred candidates and employers are better able to make informed decisions about the potential match between the worker and the job than if the candidate had had no referral.

Fernandez, Castella, and Moore (2000) argue that existing employees’ social ties provide employers with better pools of applicants in three important ways. First, employee social ties expand the pool of job candidates by making information about vacancies available to individuals who might not otherwise have learned about them. Extensive search has thus been related to increased numbers of qualified applicants. Second, in accordance with the principle of homophily, employees tend to refer job candidates who are similar to themselves. Because employees—who have already proven themselves as having satisfactory levels of productivity—are most likely to socialize with people like themselves, the people they recommend will have better job qualifications than people who lack employee recommendations. Third, employees effectively pre-screen potential candidates before providing referrals to their employers because their reputations are on the line; recommending unqualified job seekers is not in their best interests. Overall, having access to a better quality pool of job candidates lowers the number of screens employers require to choose well-qualified workers and, thus, saves businesses resources and time.
Fernandez, Castella, and Moore view employers who rely on employee referral networks as “social capitalists” (2000:1289) who invest in employees’ social connections and subsequently gain economic returns on their investment. Such employers reap other benefits, as well. By providing more credible information to both employees and employers, the referral system not only cuts employers’ recruitment costs and enhances the fit between worker and job, but also increases social integration within the workplace and lowers turnover by bringing together individuals with preexisting social ties (Fernandez, Castilla, and Moore 2000; Marsden and Campbell 1990). Hiring employees through network ties may also serve employers as means of control over the workforce (Granovetter and Tilly 1988).

From the supply side, the researchers pay closer attention to the ways in which an individual may gain access to information about available vacancies, find a job without conducting an active search, obtain influence on employer’s hiring decision his or her contact may have, and thereby gain a competitive advantage over otherwise equally qualified job candidates. Unlike the studies looking at the demand side of network use in the labor market, the focus of this research is on individuals. The two major descriptive questions typically investigated in studies of how networks influence job search processes are (1) Who uses networks to find jobs? (2) Who benefits from finding jobs through networks? These studies seek to compare individuals based on socio-demographic characteristics such as age, sex, ethnicity/race, education, and occupation.

The use of existing social networks in job search has also been related positively to status attainment outcomes such as earnings, occupational prestige, job duration, and
job satisfaction (Campbell and Rosenfeld 1985; De Graaf and Flap 1988; Green, Tigges, and Browne 1995; Hsung, Chow, and Chen 1998; Korenman and Turner 1996; Lin, Ye, and Chen 1997; Simon and Warner 1992). However, research in this area did not produce conclusive evidence (see reviews by Granovetter 1995, Marsden and Gorman 2001) as in many other studies the relationship between the use of networks in job search and stratification outcomes resulting from such use was either null or negative (Corcoran, Datcher, and Duncan 1980; Mouw 2002; Volker and Flap 2001). As a result, scholarly attention has shifted toward identifying the factors that condition the effect of social capital on status attainment.

One direction this research took was toward what Marsden and Gorman termed “network morphology” (2001:471). This direction focuses on the structural characteristics of the personal ties that provide workers with job information. Granovetter (1974) argues that the strength of ties influences the kind of information workers receive when they get new jobs because weaker ties, which tend to connect job seekers directly with prospective employers, provide more diverse information about jobs. Burt (1992) draws attention to the role the density of workers’ networks plays in their occupational success. His research shows that networks rich in structural holes (non-redundant ties) provide individuals with informational and control benefits necessary for successful careers. Other researchers suggest that larger and more diverse networks produce positive labor market outcomes (Campbell, Marsden, and Hurlbert 1986; Podolny and Baron 1997). At the same time, if all relevant studies are considered, the diversity of the findings (see reviews by Granovetter 1995; Marsden and Gorman 2001; Lin 1999)
indicates that the link between status attainment and network morphology does not entirely explain the inconsistency in the relationships between workers’ use of personal networks in finding jobs and their status achievement. For example, although Granovetter (1974), Eriksen and Yancey (1980), and Staiger (1990) find full or partial support for the strength of the weak ties hypothesis, Marsden and Hurlbert (1988) and Bridges and Villemez (1986) show none.

Montgomery (1992) argues that the problem may lie in the studies’ design. Cross-sectional studies usually rely on retrospective design; they typically concern themselves only with successful searches without looking at the search process itself. Lin (1982; 1990; 1999; 2001) takes a somewhat different approach to evaluating the quality of social connections. Instead of measuring tie strength or the structural characteristics of networks—size, density, structural holes, or diversity, for example—he looks directly at the social status of workers’ contacts. He explains that it is not the contacts themselves that are important, but rather the social resources to which the contacts can provide access. The higher the social status of a contact, the more abundant are the resources that can be reached when that contact is utilized. The resources available to workers through their contacts are thus conceptualized as social capital. In parallel with human capital, social capital theory argues that—all things being equal—people with higher levels of social capital have better chances for upward mobility.

The concept of social capital is becoming increasingly relevant to the study of labor markets. It has been applied in various areas of social studies such as status attainment (Bian 1997; Burt 1998; Coleman 1988; Lin 1999; Montgomery 1992),
immigration (Liang 1994b; Sanders and Nee 1996; Sanders, Nee, and Sernau 2002),
health (Holtgrave and Crosby 2004; Veenstra et al. 2005; Weitzman and Chen 2005),
civil activities (Edwards 2004; Paxton 2002; Putnam 2000; Saxton and Benson 2005),
and economic activities (Renzulli, Aldrich, and Moody 2000; Uzzi 1999). The origins of
the concept can be traced to Pierre Bourdieu's early work on the relationship between
cultural reproduction and reproduction of social classes (Schuller and Field 2000). Social
capital is a form of capital that can be compared to economic and cultural capital and
plays a significant role in class distinctions (Bourdieu 1986).

A number of scholars since the 1970s have contributed to the clarification and
refinement of the concept of social capital. Putnam (2000) conceives of it as an attribute
of larger groups such as communities and societies, and he considers levels of social
integration and trust as indicators of social capital. Putnam focuses on civic action and
macro-level entities, unlike status attainment researchers, who pay closer attention to
what social capital means to individuals. Coleman (1988) has investigated the
relationship between human and social capital in educational contexts and theorized that
social capital is a crucial factor in determining educational attainment. In the studies of
labor market activities and in the status attainment literature, social capital is viewed as
belonging to individuals. Measures of social capital at the level of the individual typically
take some form of a description of one’s ego network. For example, Burt (1992) defines
social capital in terms of a certain configuration of one’s relationships to others, which
can either improve or constrain one’s access to information and control.
The process of refining the concept took decades—and even now various authors offer their own definitions of social capital. However, most scholars agree that social capital, unlike economic or human capital, is a resource that is contained in social relations and used by actors (be they individuals, groups, organizations, communities, or societies) to obtain other resources. Trust, obligations, and information flow are viewed as the essential elements of social capital that make it so valuable. Snijders (1999) notes that, in effect, social capital refers to an individual’s stock of second-order resources—that is, resources that become available through others, such as the human capital of a friend.

While there exists a great volume of literature dedicated to the analysis of the effect of social network use in job search on stratification outcomes, Lin (1990) has explicitly connected attributes of networks to the concept of social capital. Following up on Laumann’s findings on friendships between men in an urban setting (Laumann 1966), he explains that it is not the strength of the ties *per se* that matters, but rather the men’s access to individuals with high social status who can connect them to better quality jobs. Various measures of the quality of social networks (such as strength of ties) indicate in terms of social status the depth of one’s pool of social contacts and the likelihood of one’s having ties to high status individuals. Weaker ties tend to be more heterogeneous; this means a person who has weaker ties gains access to resources available to individuals with a wider range of social statuses than a person who has stronger ties. Stronger ties tend to be more homophilous; the range of social statuses in one’s network is narrower. A wide range of social statuses in one’s network is richer and more useful than is a narrow
range because the former is more likely to include people who have higher social status than one’s own. An individual then can mobilize the resources of his or her contacts to find a new job. The higher one can reach up the status hierarchy, the more useful are one’s social resources in acquiring a better quality job. A number of studies have tested Lin’s theory of social capital and have found a positive link between the status of one’s contacts and stratification outcomes (Lin and Dumin 1986; Lin, Ensel, and Vaughn 1981; Lin, Fu, and Hsung 1998; Marsden and Hurlbert 1988; Wegener 1991).

Mouw (2003), however, cautions that findings of a positive relationship between the status of one’s contacts and stratification outcomes may be not causal, but instead spurious in nature. He draws researchers’ attention to the principle of homophily in human interactions (McPherson, Smith-Lovin, and Cook 2001): “If successful people prefer to socialize with other successful people, then this preference would result in a correlation between friends’ income and occupational status, even in the absence of causal effect of social capital on labor market outcomes” (p.869). Building on Montgomery’s search model (Montgomery 1992), Mouw suggests an indirect test of causal relationships between network social capital and status attainment. He shows that, under the conditions of either extensive or sequential job search, if the use of social

---

4 Consider two individuals with occupational status scores of 60 and the same number of individuals in their networks; however, the ties of the first person are stronger on average than the ties of the second person (for example, the second person has more kin ties than acquaintances). This means that the distribution of the occupational statuses in the first person’s network will be clustered closer around his or her own status and, thus, will have a lower range than the distribution of occupational statuses in the second person’s network (20 vs. 50, for example). If we look at the highest occupational status in the first person’s network, we will find that it is 70, while in the second person’s network the highest occupational status is 85.

5 In extensive search, a worker receives all job offers and then chooses the best. In sequential search, a worker receives one job offer after another and makes a decision on whether to accept a given job based on his or her reservation wage.
contacts is endogenous to the level of social capital and having better contacts results in better jobs, then better connected persons should have greater chances of getting jobs through network ties. Mouw also considers cases in which the use of networks is exogenous. This happens when workers accept the first job offer they receive or accept randomly chosen job offers. In these cases, using network ties leads to better jobs, but workers with better quality contacts are no more likely to use networks to find jobs than are workers with worse quality contacts. Under these conditions, the interaction effect between the use of personal ties and the social status of the people who enabled the success of the job search is expected to have a positive effect on the quality of the job found.

Thus, Mouw sees two major ways in which support for social capital theory can be shown. First, if network use is endogenous to the level of social capital, researchers must demonstrate that measures of social capital (such as the social status of one’s ties) increase both wages and the likelihood of one’s using social networks to find jobs. Second, if network use is exogenous, researchers must demonstrate that the use of networks to get jobs leads to higher wages. They can accomplish this by testing the interaction effects of network quality measures and network use on labor market outcomes.

Mouw’s own analysis of several U.S. samples (Mouw 2003) shows lack of support for social capital theory. His analysis of data from the National Longitudinal Study of Youth, the Urban Poverty and Family Life Study, and the Multi-City Study of Urban Inequality demonstrates that while social network measures do, indeed, have a
positive effect on wages, they are not related to an increase in the likelihood of social networks’ being used. At the same time, interaction terms between the use of networks to get a job and social capital variables fail to show an effect on labor market outcomes. These findings reject the possibility that the use of social networks is exogenous to the level of social capital. Mouw concludes that the social capital effect on labor market outcomes is spurious rather than causal, but he admits that other studies based on other samples might prove otherwise.

To conclude, current research on the role of social ties in the labor market is extensive and theoretically rich. Nevertheless, it leaves some issues unresolved. For example, it pays little attention to the variation of findings depending on the institutional and economic conditions faced by the employers and job seekers in each given study.

**Macro-Level Context for Network Use in the Labor Market**

A number of scholars have argued that differences in network use and the outcomes of their use in various countries are due to differences in the institutional arrangements of labor market activities. De Graaf and Flap (1988) found lower levels of personal network use in West Germany and the Netherlands than in the United States. They attributed this difference to the level of bureaucratization of firms and their hiring procedures. Korpi (2001) found lower levels of personal network use by unemployed persons in Sweden than in the United States. He explained his findings by pointing to Swedes’ greater access to jobs through public employment agencies. Watanabe (1987) in Japan and Bian (1997) in China found that stronger ties are used more often for job search than in the United
States because of longer tenure and a need for personal trust, respectively. Still other authors have focused their research not as so much on the differences between institutional arrangements, as on the effects of the state of economy—such as industry growth or decline (Brown 2000), economic recession, and rising levels of unemployment—on the use of networks (Jenkins et al. 1983; Wial 1991; Wood 1985).

Despite growing evidence that macro-level context has a significant impact on the way social capital works in the labor market, most research on social capital and labor markets ignores macro-level factors’ effects on the job search process. Less is known about such influences than about the influences of network morphology. Although some studies provide macro-level accounts of network use and its outcomes, they nevertheless mostly focus on individuals’ characteristics. They rarely test how the macro-level context in which job searches take place influences the likelihood of network use in job search and, in turn, the effect of network use in job search on stratification outcomes. The primary objective of this dissertation is to examine these questions in detail.

It is important to study the influence of macro-level factors on network use and on the outcomes of network use because the process of labor recruitment—which influences the outcomes of job search through personal ties for individual workers—is an organizational process. Organizational theory emphasizes the importance of the environment in which an organization is embedded to understanding the underlying processes, structures, and outcomes (Pfeffer 1982; Scott 1987). Many researchers have called for contextual analysis of labor markets (see review by Beggs and Villemez (2001)). Just as some sociologists, concerned about the inclusion of social relationships in
models of economic activities, routinely criticize economic approaches to the labor market for ignoring social relationships, other researchers take issue with economic approaches for their assumption of spatial homogeneity (Clark, Gertle, and Whiteman 1986). Their research shows that local conditions have an impact on workers' wages (Parcel and Mueller 1983; Topel 1994), female labor force participation (Stolzenberg and Waite 1984), and occupational sex segregation (Abrahamson and Sigelman 1987). These studies suggest that macro-level factors that describe the spatial, economic, and institutional settings in which social contacts exist and are used in the job acquisition process may be crucial in determining the chances of an individual’s finding a job through social networks, the kinds of jobs to be found through social networks, and the benefits of finding a job through such networks.

Other researchers draw attention to macro-level embeddedness of social capital in economic activities by emphasizing both changes over time and historical context. Mizruchi and Stearns (2006), in a study of corporate financing, examine macro-level changes in the United States and show that network “embeddedness is historically contingent” (p.310)—that is, it depends on historical context and shifts as institutional environments change over time.

A cross-national study might provide an ideal way to examine the influence of macro-level variables on the use of networks and job search outcomes. However, an investigation that focuses on a single country would have the potential to yield fruitful results too—as long as, within that country, substantial variation in economic
development and institutional background could be observed across local-level units (such as states, regions, provinces, and metropolitan areas).

**Key Economic and Institutional Factors Influencing the Use of Networks in Job Search**

As discussed above, referral networks are used and valued by employers in many countries because information flowing through personal ties helps to reduce uncertainty about candidates’ qualifications—and it comes free of charge. One of the most important factors which may influence the use of networks in the labor market is oversupply of the labor force. The common view contends that during job shortages, employers do not need to use any recruitment methods other than informal means. Under such conditions, many employers actively prefer to use the personal networks of their current employees (Jenkins et al. 1983; Wial 1991; Wood 1985).

Oversupply of the labor force, and consequently the unemployment rate, reflects the level of competition for jobs among workers and the amount of information employers have to process when choosing between otherwise equally qualified candidates. A high volume of applications is unavoidable when jobs are scarce, which means employers’ costs for reviewing applications rise. One of the ways private firms can cut their costs is by keeping labor expenditures to a minimum. This is often achieved not only by controlling workers' wages and benefits, but also by controlling the size of the labor force and by using the cheapest but most productive methods of search for qualified workers. When jobs are scarce, employers have a greater number of qualified
applicants for the same number of jobs, which increases the chances of equally qualified persons applying for and thereby competing for the same jobs. Personal references from someone the employer already knows frequently offer a means by which employers may choose between such equally qualified candidates. Another way firms cut the costs of job candidate selection is by reducing the volume of applications. Employers achieve this by effectively narrowing the channels through which information about vacancies flows to their existing labor force. Thus, the level of unemployment may positively affect the likelihood of a job’s being found through social ties rather than through other means. It may also improve the chance that better jobs will be given to those who have higher levels of social capital.

Job shortage, however, cannot have a positive effect on network use indefinitely. Looking for a job among acquaintances cannot be productive when almost all of one’s acquaintances are out of work themselves. Eventually, one may be forced to turn for help with job search to employment agencies and benefit from this choice more than from networks (Osberg 1993). Labor shortage, on the other hand, may make personal ties an inefficient recruitment method by producing too small of a flow of job candidates. In such situations, more expensive ways of finding workers may become attractive to employers (Licht 1992). Fevre (1989), however, argues that even under conditions of extreme labor shortage employers tend to look for workers by tapping into personal networks.

Economic cycles of recession and growth may influence the number of jobs available in a given region. During periods of economic recession, employers face higher
economic risks and have to be more selective in their choice of job candidates. Under such conditions, employers are acutely interested in both obtaining more in-depth information on job applicants and gaining the loyalty of future employees by hiring via the social ties of existing employees (Jenkins et al. 1983; Wial 1991; Wood 1985). On the other hand, high levels of economic growth may mean higher levels of entrepreneurial activities and growth in the number of startup businesses. New firms, in general, tend to rely on the entrepreneurial networks of their founders for all necessary resources, including employees (Aldrich 1999). This suggests that while rates of network use depend on the conditions of the local economy, they can go up both during economic recessions and during periods of rapid economic growth.

Previous research has found that small-sized firms usually lack personnel departments and are more likely than larger firms to hire new employees through networks (Granovetter 1984; Holzer 1987; Marsden 1994). It is thus reasonable to suggest that in a labor market with a high proportion of small-size organizations, the proportion of jobs found through personal ties will also be high.

Institutional environment and state policies stand out as important contextual factors in the status attainment process (see review by Breiger (1995)). As discussed above, a number of cross-cultural studies have argued that differences in institutional arrangements across countries may explain the differences in findings about the use of social networks in the labor market (Bian 1997; De Graaf and Flap 1988; Korpi 2001; Watanabe 1987). Other studies emphasize the importance of economic context to the use of social networks in the labor market by examining the effect of the macro-level factors
that vary across time or across geographical units within one country (Brown 2000; Clarke 1999; 2000; Jenkins et al. 1983; Wial 1991; Wood 1985; Yakubovich and Kozina 2000). Although quite a few studies have taken that direction, and many researchers have emphasized the importance of the larger context for the role networks play in the stratification process, none of them tests their hypotheses with a large number of macro-level observations.

In sum, several important macro-level characteristics that may influence the significance of social ties in a labor market can be identified. Among them are the level of labor supply, the level of economic growth and development, the prevalent size of the firms and organizations in the local labor market, and the political-institutional settings in which labor markets and social networks are embedded. The existing literature lacks systematic large sample studies of how larger context may affect the use of networks in job search. This dissertation project contributes such a study to the current labor market research.

**Research Design**

This study will focus on the temporal and regional differences of network use in the labor market of the Russian Federation during 1985-2001.6 Research design with a focus on a single country delivers one major advantage to studying the effects of macro-level

---

6 Prior to the dissolution of the USSR, the Russian Federation was one of the Soviet Union’s 15 republics; it was then known as the Russian Soviet Federative Socialist Republic. In this dissertation, terms such as “Russian workers” and “Russians” refer to residents of the Russian Federation, not to ethnic Russians.
economic changes on the relationships between units at the micro-level: it allows for control of such aspects of macro-level environment as historical development, federal policy, and national culture, which would all inevitably influence findings if the macro-level units of analysis were countries rather than regions of the same country. The Russian Federation is a country with great variation across spatial units. The Russian Federation consists of 89 constituent territories (Sub’ekty Federatsii), which are often called “regions” in the English-speaking literature. These regions are highly diverse in terms of climate, culture, and industrial structure. Significantly, they each received the opportunity to develop independent economic policies only in the post-Soviet period. Since 1992 they have diverged significantly, with some regional governments leaning toward aggressive market reforms, while others maintain stricter regulations (Gerber 2000). A number of researchers have recorded a growing differentiation between the regions—not only in income, but also in standards of living and labor market conditions (Bradshaw and Vartapetov 2003; Federov 2002; Mikheeva 1999; Selm 1998; Sutherland and Hanson 1996).

Data on the Russian Federation provides researchers with a great degree of not only spatial, but also temporal variation. An investigation of the dynamic processes of social capital use in Russia can prove very informative because in the last 15 years Russia has undergone major institutional changes as it has transitioned from a centrally planned economy to a market economy. These changes have included changes in labor market

---

7 Constituent territories of the Russian Federation are territorial units that are roughly equivalent to the states in the United States. However, unlike in the United States, constituent territories of the Russian Federation take on a variety of juridical forms and have varying degrees of autonomy from the federal government.
institutions. Researchers generally agree that, for a variety of reasons, labor markets in the USSR and in Eastern European countries with centrally planned economies were indeed markets because the state did not control workers' mobility and state enterprises competed for workers under conditions of labor shortage (Jenkins 2001; Yakubovich and Kozina 2000). Major changes in the labor market during the period of market reforms included the decentralization of wages, which led to increases in income inequality, and the appearance of private employers, which led to a switch in the economy from labor shortage to job shortage (Jenkins 2001). In addition, the market reforms were followed by decreases in industrial production, growth of trade and service industries, and an overall economic decline.

Labor market research has reported an increase in the significance of personal networks for obtaining jobs in Russia since the market reforms began (Clarke 1999; 2000; Gerber and Mayorova 2007; Yakubovich and Kozina 2000). However, the question of how changes in macro-level conditions influence patterns of network use and stratification outcomes of network use has not yet been vigorously examined. This increased reliance on personal networks in the search for employment opportunities has been linked to increased uncertainty during the institutional transition. For example, Yakubovich and Kozina (2000) explain that the significance of personal ties in the labor market increased because Russia, as a transitional society, has often been characterized by the heightened uncertainty of its market activities and the presence of an institutional vacuum due to the breakdown of state institutions and a lack of fully functioning market institutions. Gerber and Mayorova (2007) also refer to uncertainty, but make a point that
reliance on networks is an inevitable part of the market as private employers face greater budget constraints, and thus greater financial uncertainty, under present market conditions than did state managers under the labor shortage conditions of the Soviet economy. On the other hand, Clarke (2000) explains that the increased significance of social ties has resulted from the legacies of the Soviet style of relations between management and workers. I will discuss the theories that explain the increased significance of social ties in the Russian labor market in greater detail in Chapter 2.

**Summary**

This chapter provides an overview of the theories and empirical research explaining how social networks work in the labor market. I critique current research for paying little attention to the macro-level context in which social networks operate and review several studies that suggest how economic and institutional factors may influence personal network use in job search. In the next chapter, I provide relevant historical and economic background on Russia, focusing on the labor market situation during the Soviet period and during the era of market reform. I also discuss the role social networks played in economic activities in Russia during the Soviet period, as well as current theories explaining the consistently growing role of networks with respect to job mobility during market reforms.
CHAPTER 2. PERSONAL NETWORKS AND LABOR MARKET IN RUSSIA

During the Soviet period, the Russian economy was centralized and planned. This changed at the end of 1991 when privatization reforms began the transformation of Russia’s economy from planned to market-based. In the Soviet economy, social networks were used to fulfill consumption needs, whereas they are increasingly used to find jobs in modern Russia’s privatized economy. Nonetheless, research on social networks in Russia tends to see them as legacies of the old economic and political system. I argue, however, that current macro-level changes in the economy are responsible for the growing significance of personal ties in the Russian labor market. Since 1992, the Russian economy experienced a deep recession which began to slow down only in 1999. The Russian Federation also experienced widespread disruption of the institutional order in the workplace, growth of unemployment levels, and growth of the private and small business sectors. All of these factors might have motivated employers to search for workers through personal ties and strengthened the positive relationship between finding a job through personal ties and stratification outcomes.

Personal Networks in the Labor Markets of State and Market Economies

Most studies on the use of personal ties in job search have been conducted in countries with market economies. The case of Russia’s labor market is somewhat unique as, until very recently, Russia’s economy was dominated by state planning rather than by the free market. Even now, many years after market reforms have begun, researchers still refer to
Russia’s economy as transitional rather than market-based. An analysis of networks and labor markets in Russia can both contribute to a larger debate on changes in stratification processes in transitional societies (Gerber 2001; Nee 1989; Rona-Tas and Guseva 2001; Szelényi and Kostello 1996; Walder 1996) and further clarify some of the claims and findings about the job matching processes conducted in well-developed market economies.

Before market reforms, the main venue for job placement in Russia was through direct application. The proponents of neoliberal economic theories at the International Monetary Fund (IMF), the World Bank, and the Organisation for Economic Co-operation and Development (OECD) who advised the Russian government on market reforms expected that privatization would lead to massive unemployment and, as a consequence, to the widespread use of market intermediaries such employment services and advertisement for job search (IMF/WB/OECD 1990). But the situation in the Russian labor market followed a path not predicted by the neoliberal economists. Even though unemployment and the use of advertisement and employment services indeed went up after 1991, neither rose to the extent that had been predicted. Instead, Russian businesses averted a larger crisis by engaging in such practices as delaying payment of wages, assigning workers to administrative leave, and filling vacancies through personal connections. The mistake the neoliberal advisors made was in ignoring the facts that the social embeddedness of economic activities (Granovetter 1985) cannot be avoided even in the least regulated market economies.
Personal connections became the principal means of matching workers with jobs during the Russian transition to a market economy (Clarke 1999; 2000; Gerber and Mayorova 2007; Yakubovich and Kozina 2000). There is still a debate over the causes of such change. Some argue that the increased significance of personal ties in the labor market is a lingering result of Soviet-era patronage relationships, which were based on personal loyalty between employers and employees (Clarke 2000). Others suggest it is a consequence of the economic transition, which created an institutional vacuum by destroying the old system of credential evaluation and making it unclear to employers which criteria they should use to evaluate job candidates’ skills and potential for performance (Yakubovich and Kozina 2000). Still others point to the increased reliance on personal connections in job search as a consequence of the privatization process: private employers, faced with a set of constraints that was unknown to state-run businesses, are compelled to use personal ties as a more efficient way of hiring qualified workers (Gerber and Mayorova 2007).

I will test these various hypotheses by investigating how changes in economic and institutional context across time and differences across regions affect both the use of personal ties in job search and the stratification outcomes associated with getting jobs through networks. The fact that the Russian economy, its labor market, and its other institutions have been changing rapidly in the last 15 years presents an opportunity in studying the role social networks play in social stratification: many previously taken-for-granted assumptions about market economies can now be tested. While one must be aware of the unique institutional and cultural forces involved in the shaping of network
use in the Russian labor market to be able to interpret the results of such a study, I caution that the legacies of the old economic system should not be overemphasized. Instead, I propose that greater attention should be paid to the institutional and economic changes that took place in the Russian economy during the period of reform, such as changes in unemployment levels, the proportion of small businesses, the size of the private sector, and economic performance. Overall, such changes can take place in any society with any kind of economic system; thus, focusing research on the effects institutional and economic factors have on the use of personal networks in the labor market makes the Russian case useful to understanding how networks may work in the labor markets of other countries.

In this chapter, I first briefly describe the economic system that existed in the Russian Federation during the Soviet period and the changes in the economy that took place during 1980s and 1990s in modern Russia. Then I provide a background on the labor market situation in Russia during the period of my study, which extends from the Soviet era, during which the economy was controlled by the state (1985 to 1991), through the years during which the economy began its transition to market-based economy (1992 to 2001). I also discuss the role that social networks have played in Russian society and how they were typically used in the economy during this period. Finally, I review the existing literature’s theoretical explanations for the increased significance of social ties in finding jobs in Russia.
Russia’s Economy up to and after 1991

Until December 1991, when the official dissolution of the Soviet Union took place, Russia was one of 15 Soviet socialist republics and, as such it had a centrally planned economy; that is, its economy was mostly controlled by the state. The centrally planned economic system was set up in the 1930s, when the country transformed what was primarily an agricultural economy into an industrial one in a very short time. Since the 1930s, the system underwent many changes, the most radical of which took place in the 1980s during Mikhail Gorbachev’s economic and political reforms. Russia’s economic reformation began as an attempt to improve the central planning agency’s performance, but later it was redirected toward decentralization of the economy. The 1988 Law on Cooperatives gave start to private entrepreneurship. 1991 reforms by Boris Yeltsin’s government eliminated administrative regulation of wages and state regulation of prices, which resulted in the mass privatization of state enterprises. These events set the stage for a drastic transformation of the formerly state-run economy.

Upon the dissolution of the Soviet Union at the end of 1991, IMF and World Bank specialists took over the economic reformation of the Russian Federation and led a rapid series of radical reforms that came to be known as “shock therapy.” The goals of the reforms were twofold: to disrupt the existing system of state management of the economy and to develop a market-based economy in a very short period of time. Once it was implemented by Yeltsin’s government, however, shock therapy triggered a destabilization of the economy and of Russian society as a whole. It resulted in a deep

---

8 For more details on privatization in Russia see, for example, Barberis et al. (1996), Clarke (1994), Gerber (1998), Marangos (2002), and Rutland (1994, 1997).
economic recession, the destruction of industrial production, the pauperization of the vast majority of the population, the withdrawal of the welfare programs, the abrupt privatization of state property by a few oligarchs, a rapid increase in crime rates, and a demographic collapse among other social problems that have been widely discussed in the research on Russia’s economic transition. When oil prices fell in 1998—and oil being a major source of Russia’s external revenues—the Russian economy endured yet another crisis.

With the eventual rise in oil prices and a rising world demand for natural gas, Russia has begun to see its economy gradually improve. In 2000, new political leadership came to power. Under Vladimir Putin, the government expanded market reforms and renewed efforts to rebuild institutional order after the chaos of the 1990s. In the first few years of the 21st century, the Russian government has, among other things, formed a budget surplus and repaid its debts to international monetary institutions. Russia’s economy since then has shown rapid growth: industrial production has been restored and unemployment rates have gone down, while wages and consumption have grown.

**Russia’s Labor Market during the Soviet Period**

In the West, there exists a pervasive myth that individuals in formerly socialist countries were not free to choose their own occupations and jobs, but instead were administratively assigned to their jobs by the state. This myth is often repeated and accepted by students
of Russia and the Soviet Union without having received the benefit of critical evaluation.\textsuperscript{9} It may have been true of some countries under communist leadership or during certain periods in history. Upon closer examination, however, researchers (Clarke 1999, Chapter 3; Jenkins 2001; Oxenstierna 1990) agree that the labor market in the former Soviet Union throughout the post-Stalin period was a true market: it was not significantly controlled by the state, despite the fact that the functioning of enterprises themselves was not subject to market forces and that there were, indeed, attempts by the state to gain tighter control of labor market dynamics.

During the Soviet period, laws undeniably obliged citizens to work and gave state the authority to punish those who avoided employment. However, in the post-Stalin period these laws were not strictly enforced, and some groups of individuals (military wives, for example) remained out of the labor force for extended periods of time without experiencing any legal consequences. Administrative assignments in the Soviet Union were limited to the first jobs appointed to graduates of post-secondary educational institutions (Clarke 1999, Chapter 3; Gerber 2003; Yakubovich 2001). Such appointments were far from repressive and forceful and, indeed, were rather flexible in considering students’ wishes, academic records, working ties to enterprises, and family situations, among other factors (Clarke 1999, Chapter 3). Graduates were required to work in their assigned positions for only 2 to 3 years. There was an expectation on the part of the state (and many employers) that, after completing the required term of service, workers would stay on with their first employers. Many individuals did, in fact, remain at

\textsuperscript{9} See, for example, dissertation by Spenser (2003).
their first job longer than the required term. Yet the decision was a personal choice, or the consequence of a worker’s lacking better opportunities, rather than a legal requirement imposed by the state. The vast majority of workers, nevertheless, were able to—and did—move to other jobs of their own choosing at the end of their initial work assignments.

In essence, assignment of the recent graduates to their first jobs was less about control over individuals by a repressive state and more about advancing the interests of groups and institutions. Some of those interests are known and have been dealt with in very similar ways in market democracies: (1) the need to provide vocational and higher education to the masses without excluding low-income, less educated groups; (2) the need to deal with the fact that most recent graduates lack work experience required by employers on a large scale through the implementation of public policies; (3) business demands for new workers whose skills are tailored to their needs; and (4) educational institutions’ interest in increasing their prestige and attracting the best students through the promise of desirable job placements upon graduation. Overall, in the Soviet Union only about 5 to 6% of jobs were found through job assignments (Maslova 1985 and Otsu 1992 as cited in Yakubovich 2001). Studies of enterprises sometimes show a higher percentage, but upon closer examination many of the jobs obtained through assignments (according to the workers) in reality were found through other methods of job search, such as direct application or the use of social networks (Yakubovich 2001, Chapter 5).

There were other cases which some may consider as restricting labor market activities. For example, senior members of the Communist Party were expected to move
to any job upon receiving a directive from the party. In practice, however, such job allocation had been very rare since the 1960s (Clarke 1999, Chapter 3). The government also organized recruitment to jobs in developing regions, as well as in underdeveloped sectors of the economy. But this method was not administrative in nature, because the state used financial and other incentives to attract workers and their employment choices in such cases were voluntary (Otsu 1992 as sited by Clarke 1999). The military did participate in many civil projects. However, this non-market means of augmenting the labor force was determined by the specifics of the Soviet Army’s functions, rather than by the characteristics of the labor market in the Soviet Union.

To summarize, workers were free to both choose their work place and change it at will during the post-Stalin period. To some extent, the labor market in the Soviet Union functioned in the same manner as did the labor markets of market economies of the time. It has to be noted, however, that there was one major difference: in the Soviet Union, the labor market was characterized by a shortage of labor, whereas in typical market economies, the labor market is characterized by a shortage of jobs.

It is important to note that by comparison to other countries virtually the entire working-age population—both men and women—was employed during the Soviet era. In fact, the achievement of full employment lay at the heart of Soviet economic policies, which were based in part on the ideal of economic security for the workers. While enterprises and organizations were restricted in the number and kinds of jobs they could offer, they were free to decide whom to hire and upon what criteria. Firing, especially for poor performance, on the other hand, was a more complicated matter because of the
state’s extensive legislative protection of workers and their rights. Just as individuals were encouraged to be attached to a work place, enterprises were encouraged to deal with and accommodate poorly performing workers and to get rid of undesirable workers only as a last resort (Clarke 1999, Chapter 3). Overall, high labor turnover was evaluated as a negative sign of labor dynamics, as it was considered disruptive to both the production process and the social integration of the workplace. Workers were encouraged to stay in the same enterprise or organization throughout their entire career. To achieve that end, many benefits were tied to a worker’s tenure in a given enterprise. Consequently, many workers did stay in their first job throughout their lives. Nevertheless, the level of labor turnover overall was quite high and comparable to that in market economies (Jackman and Rutkowski 1994).

Clarke (1999, Chapter 3) provides a detailed analysis of how enterprises worked and how hiring took place under the central planning system. The Soviet enterprise, he states, was created to be productive specifically under conditions of scarcity.\(^{10}\) In a centrally planned economic system—unlike under the capitalist system—investment, supplies, wages, and even the size and structure of the labor force were allocated to the enterprise by the central planning agency in exchange for fulfillment of the production plan. Assignment of the production plan was not a one-way, top-down process; rather, it was a series of negotiations based on a number of factors. In these negotiations, management always had an incentive\(^ {11}\) to increase the size of the labor force as much as

\(^{10}\) For a discussion of why Russia has not had a chance to accumulate the capital necessary to jumpstart a successful capitalist economy as did Western industrial countries, see Guins (1946) and Parshev (2000).

\(^{11}\) See Clarke (1999, Chapter 3) for detailed discussion of incentives.
possible. Once an enterprise secured wages for a specific number of workers, it had every incentive to recruit up to its limit so as to not lose funding in the next round of negotiations. Enterprises kept reserves of labor, but most of those reserves were retained in auxiliary, manual, and low-skill labor positions that were not directly involved in the production (such as in transport, loading, storekeeping, cleaning, and security).

Overall, the labor market in the Soviet Union was characterized by shortages of labor. Wages were strictly controlled by the state, in part, as a means of preventing open competition between enterprises for the best workers. Wage controls did not mean, however, that wage differentiation was lacking. It has been well recorded that wages were differentiated in the Soviet Union by a number of criteria, such as branch, region, and occupation.\(^\text{12}\) Within an enterprise, the shops and workers upon whom the achievement of the production plan depended were paid higher wages. Larger and better-financed enterprises were also able to secure the best workers by developing various housing, childcare, cultural, sporting, and leisure facilities; subsidizing vacation facilities; and providing these fringe benefits to workers and their families.

**Russia’s Labor Market during the Transition to a Market-Based Economy**

The designers of the market reformation in Russia expected that their reforms would produce high levels of employment unemployment as (in their view) inefficient state-run enterprises started shedding labor once they became privatized. To the surprise of many

\(^{12}\) For information on wage differentiation and social mobility in the Soviet Union and Russia, see Gerber (2002), Gerber and Hout (1998, 2004).
observers, this did not happen. Instead of high unemployment, many Russian workers found themselves dealing with wage arrears and administrative leaves without pay. At the end of 1991, most enterprises were instantaneously freed from almost all external constraints on the conduct of their employment and wage policies. However, this much-desired freedom came in the context of very high uncertainty as the political, economic, financial, legal, and cultural institutions—all of which determined organizations’ environment—rapidly changed in quite unpredictable ways. Uncertainty was coupled with increasingly scarce financial resources as credit from banks and government financing and/or contacts became hard to obtain. Clarke (1999) suggests that even well-established and well-managed capitalist enterprises would have found it difficult to function under these conditions, let alone Russian enterprises that were inexperienced with the capitalist market and capitalist management. Dolgopyatova and Evseeva (1994) explain that under such conditions management’s typical and rational response is to orient itself to survival, rather than to development.

Clarke (1999, Chapter 3) identifies three major stages that most Russian enterprises had to go through in changing employment policies, and he roughly divides them into three periods: 1992 to 1993, 1994 to 1995, and 1996 to 1998. In the first period, enterprises tried to keep the labor force intact despite drastic cuts in available financing and subsequent inability to pay wages. Enterprise managers declared “the preservation of the labour collective” (Clarke 1999, p.74) as their main goal during these
years by perpetuating traditional, paternalistic attitudes toward workers.\textsuperscript{13} Pay scales across various jobs remained practically the same. Employment policies changed very little and still depended on shop managers—only now, managers’ employment decisions depended on financial policies that had been set by enterprise directors, who were in charge of decisions about the size of the wage fund. With falling wages, growing wage arrears, and unpaid leaves, keeping the labor collective intact became increasingly difficult. Yet even when better qualified workers started to leave enterprises in hope of improving their fortunes, the vast majority of the workers remained in their old jobs.

As financial difficulties worsened around 1994, enterprise managers revised their employment strategy: “preserving the nucleus of the labour collective” (Clarke 1999, p.87) became the new imperative. As Clarke describes it, most enterprises went through similar processes in this second period of employment policy changes. First, demands on discipline were tightened and poorly performing workers lost their jobs. Then, workers who were close to retirement age were forced into retirement. Mass layoffs took place during this period, though many of the workers were persuaded to leave their jobs voluntarily. To induce “voluntary” departure of some resisting workers, managers imposed partial or full administrative leaves without pay. In the beginning, firings were rationalized in terms of social fairness; managers often considered, for example, a worker’s loyalty to the enterprise and his or her family situation. Over time, though, a worker’s skills and value to the enterprise came to influence the managers’ choices. It was also during this period that many women were forced out of the labor force.

\textsuperscript{13} See Clarke (1999, Chapter 3) and Clarke and Kabalina (2000) for more on the paternalism of the Soviet state and of post-Soviet enterprises.
Employers increasingly characterized women as more expensive and less efficient workers than men. Assertions that “a woman’s place is in the kitchen” became frequent in political discourse. At the time, many researchers and some politically active women raised concerns about the future of women as workers, as well as about the negative changes in women’s social status.¹⁴

Since the beginning of the reforms, wage arrears, tax evasion, bartering, and indebtedness to suppliers increasingly financed enterprise operations. By 1996, cutting the labor force proportionately across all production units at an enterprise had reached its limits. Further cuts would have to be more drastic and, therefore, more damaging to production. The alternative solution to laying off workers across all units more or less proportionately was to cut entire production units and departments, but only the ones that did not appear to be profitable. During this third period of employment policy changes, enterprise managers abandoned the rhetoric of preserving the collective or its nucleus and replaced it with a new priority: “bringing the number employed into correspondence with the demands of production” (Clarke 1999, p.107). In earlier periods of labor force reduction, firing decisions were made by the floor shop managers. This time, senior management became widely involved in employment decisions.

During this period, as production lines were also modernized, a switch occurred in employment policies away from retaining older, experienced, loyal workers toward hiring younger, more flexible, more adaptable, and better-skilled workers. Vacancy advertisements often made reference to a preferred age (usually up to 35 years old) and

promoted the view that laborers with work experience in the Soviet system possessed outdated knowledge that was not useful in the market economy. As this view became widely spread among employers, it became increasingly difficult for older workers to find jobs (Petelin and Semyonova, 2004 as cited in Clarke 1999).

The August 1998 default significantly worsened the financial conditions faced by Russian enterprises. In the years that followed the default, however, Russia’s economy stabilized and even began to grow; the flow of capital out of the country decreased and gradually turned into an in-flow; and the government paid off accumulated debt, improving the country’s credit rating and making foreign credit accessible to Russian enterprises. As a result, the pace of inflation slowed down. As industrial production grew, so did the average wages, number of jobs, rate of consumption, and standard of living. Wage underreporting to avoid taxation and wage arrears went down. The need to cut costs by reducing the labor force was gradually replaced by a growing demand for workers.

**Personal Networks in the Labor Market in Russia before and since Reforms**

In her qualitative study of *blat* networks, Ledeneva (1998)\(^{15}\) suggests that personal ties were often used in the Soviet period to obtain jobs. However, empirical evidence shows that hiring at enterprises in the Soviet Union was mostly done through direct application. Gerber and Mayorova (2007) analyze a national representative sample data\(^{16}\) and report

---

\(^{15}\) See more on this study below.

\(^{16}\) The same SSMDR data set I use in my data analysis.
that just over 50% of new jobs (excluding intra-firm job changes) were found via direct application (by contacting employment departments without third party involvement). Only about one-third of new jobs were found through personal ties in 1985 and 1986. This proportion is significantly below the typical rate in market economies, in which about half of new jobs are found through personal ties (Granovetter 1995; Marsden 2001). Before privatization began in Russia, job seekers typically either approached the head of a production unit directly or they contacted the enterprises’ personnel department, which sent them to talk to the heads of production units (Clarke 1999, Chapter 3). Personnel departments thus had no influence over hiring policies. Their functions were limited to completing necessary paperwork, reporting statistics on labor dynamics, and making sure that hiring and firing procedures were conducted in accordance with labor laws and various administrative regulations.

It was expected that privatization and the market reforms that followed would result in mass unemployment and a subsequent increase in the role of market intermediaries (such as employment agencies and advertisements) in matching workers with jobs. Employment agencies were practically nonexistent during the Soviet period, but state employment agencies (Federal Employment Service) were created at the time when market reforms began. Private employment agencies began to mushroom with the start of the reforms as well. To the disappointment of many observers, however, neither state nor private employment agencies managed to become popular ways of finding jobs. When asked about the use of employment agencies, Russian employers complain about the poor quality of job candidates and the high price of screening costs (Clarke and
Kabalina 2000)—just like their Western counterparts do (Rees 1966; Rees and Schultz 1970). Research shows that the percentage of jobs found through employment agencies remains consistently under or at about 5% (Clarke 2000; Gerber and Mayorova 2007). Advertisement also failed to achieve expected levels of use. It remained under 10% until 1999. In 2001, it reached 15% (Clarke 2000). Russian employers—again, like their Western counterparts—explain that they avoid advertising because it usually brings in such large numbers of applicants (many of whom are unqualified) that the process of candidate evaluation and selection becomes too costly and too time consuming (Clarke and Kabalina 2000; Rees and Schultz 1970).\footnote{For more details on the use of market intermediaries in the Russian labor market, see Clarke (1999) and Yakubovich (2001).} Ultimately, the data refute the previously held assumption that, by providing employers with a larger pool of applicants and job seekers with a larger pool of vacancies, market intermediaries would significantly improve not only the process of matching workers with jobs, but also the quality of such matches.

As was mentioned above, empirical findings consistently show increased significance of personal networks for getting a job in Russia during the transition to a market economy in marked departure from greater reliance on direct application during the Soviet period (Clarke 1999, Chapter 5; 2000; Gerber and Mayorova 2007; Yakubovich and Kozina 2000). Figure 2.1 shows the annual percentage of new jobs found through personal networks based on SSMDR data. In 1985, only about one-third of new jobs were found through personal ties. Since then, the number has steadily increased.
to about 59% in 2001 the chance that a new job will be found through social ties almost doubled.\textsuperscript{18}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2.1.png}
\caption{Percentage of Jobs Found through Personal Networks in Russia, 1985-2001.\textsuperscript{19}}
\end{figure}

Before discussing various explanations of the increased significance of social networks in the Russian labor market, I want to comment on the fact that often some researchers refer to social networks in Russia as pervasive, pernicious, and qualitatively different from social networks in the West. In general, research on the economic impact

\textsuperscript{18} See Appendix A for the exact wording of the question on the method through which a job was found.
\textsuperscript{19} The total number of new jobs included in these calculations is 6051.
of social networks in Western countries has focused on networks’ positive contribution to the success of economic activities, on how social capital can improve individuals’ or organizations’ chances of achieving their goals by stimulating the flow of information, resources, and opportunities (e.g. Burt 1992; Campbell, Marsden, and Hurlbert 1986; Coleman 1988; De Graaf and Flap 1988; Granovetter 1974; Podolny and Baron 1997; Uzzi 1999). Very few studies have scrutinized the constraining effects of informal networks on individual and organizational behavior and success in the West.\(^2\)\(^0\) Research on social networks in the Soviet Union and modern Russia, in contrast, tends to emphasize the “dark side of social capital” (Putnam 2000, p.350-363).\(^2\)\(^1\)

Unlike the use of social networks in the Western societies, the practice of using social networks to achieve economic ends in Russia is often explained by researchers in terms of traditionalism, backwardness, or anti-modernism in Russian society (Ledeneva 2000; Lonkila 1997; 1999; Rose 2000); some even relate it to “feudalization” of relationships (Clarke 2000). Such researchers frequently view the use of social networks in modern Russia’s economic activities as a rudimentary inheritance of the Soviet past and, accordingly, employ the language of the “Soviet legacy” in their studies (Clarke 2000; Ledeneva 2000; Lonkila 1997; 1999; Raiser 1997; Rose 2000). In general, research finds that social networks in Russia help individuals obtain the resources and information they need to achieve their economic goals (Caldwell 2004; Clarke 1999; Clarke 2000; Gerber and Mayorova 2007; Lonkila 1997; 1999; Smirnova 2004; Yakubovich 2005; Yakubovich (2001) also points out that, unlike studies of market societies, studies of former socialist societies typically tend to evaluate the presence of social networks in the economy in negative terms and focus on such phenomena as corruption and the mafiya rather than on the integrative role of social ties.
Yakubovich and Kozina 2000) just as does social capital research conducted in Western societies. But findings showing the importance of personal networks are often interpreted differently than similar findings showing the importance of personal networks in Western societies. While social capital research on Western countries attempts to find universal laws and principles that guide the use of social resources for economic gain, research on social networks in the Russian economy often tends to emphasize the uniqueness of this phenomenon to Russian society. The use of social ties is interpreted as a sign of Russia’s persistent traditionalism and growing importance of social networks is viewed as major obstacle to the development of market, democracy and other conventional attributes of “modern” societies (Clarke 2000; Ledeneva 2000; Rose 2000). The pervasiveness of these views of Russia suggests a general trend toward the orientalization of Russia (Hagen 2004) in Western studies. This trend needs to be reversed, in my opinion, if the West is ever to gain a proper understanding of modern Russia’s social and economic dynamics.

**Theories Explaining Growing Network Significance in Russia**

Three major theoretical approaches have evolved in the research on social networks in modern Russia’s labor market. The first approach explains the current dynamics of social network use in the labor market as a remnant of the Soviet economic relationships that has adapted to the new economic conditions. This has been called the “Soviet legacy”

---

22 Overall, the “Soviet legacy” discourse appears to dominate the research on Russia that has been done by Western scholars since the dissolution of the USSR. See Cohen (2001) for more.

23 See Said (1994) for more on orientalization.
approach. The second theoretical approach explains the growing significance of personal ties in the labor market as a result of the increased institutional uncertainty that is characteristic of transitional periods during which the institutions of the centrally planned economy have stopped working, but the institutions of the market economy have not yet been established. This has been called the “institutional vacuum” approach. The third approach views the increased role of networks in the labor market as an expected consequence of the Russian economy’s becoming a market economy in which employers face hard budget constraints and are compelled to rely on social networks as a more effective method of hiring. This can be called the “social capitalism” approach.

Networks as Soviet Legacy

There are two lines of work that explain the increased significance of social ties in the Russian economy. Ledeneva emphasizes the link between the current use of personal ties in Russia and the blat networks that were used by Soviet citizens to overcome shortages of consumer goods. Clarke, on the other hand, argues that the paternalism of the typical Soviet enterprise is responsible for current hiring practices in Russia.

Ledeneva’s study (1998) of blat networks is probably the most insightful qualitative research on the operation of personal networks in the distributive economy of the Soviet Union.24 Blat networks, as defined by Ledeneva, were a form of non-monetary exchange in which private persons bend the official rules of distribution and use their personal ties to state employees to thereby gain access to state-provided services and

---

24 Also see studies on blat by Berliner (1954, 1957), Harvard Interview Project (Bauer, Inkeles, and Kluckhorn 1959, Ch.8; Fitzpatrick 2000), and Grossman (1977).
products that they would not have received otherwise. *Blat* networks are often compared to Chinese *guanxi* networks. Ledeneva describes *blat* as reciprocal exchange based on existing relationships. This kind of exchange is not generalized the way a market exchange is; it is specific to the parties involved in the relationship. The exchange takes place for the sake of the relationship, not the other way around as it does in the case of bribery. Also unlike in the case of bribery, repayment of a favor is never immediate, can never be repaid by an equivalent favor, and often goes beyond direct dyadic relations.

In her later work, Ledeneva (2000) shows that even though market reforms and privatization have weakened seriously the basis for non-monetary exchanges, *blat* networks continue to exist in modern Russia—albeit in new forms that are better adapted to the market economy. They mainly became the basis for money-earning activities, as it is money that is in short supply in the market-based economy, rather than goods and services. The use of *blat*-like networks has become especially visible, she emphasizes, in corruptive relations between private business and upper-level officials in public office. Lonkila (1999) suggests *blat* networks have continued to be used in Russia as a way of coping with economic hardships in the post-Soviet period. On one hand, the market economy has diminished the role of *blat* networks because goods and services have become available to all, for a price. On the other hand, the turmoil of economic reforms has pushed people toward their existing personal connections as other institutional support systems failed them.

---

Ledeneva’s is one of the few studies that show high levels of reliance on personal connections in economic activities in Russian during the Soviet period. It does not, however, account for variations in the types and extent of informal exchange. Ledeneva fails to point out that blat networks constituted only one type of networks in the web of social support ties that Soviet citizens relied on in their daily lives. Non-blat exchanges involved kin, friends, coworkers, neighbors, and acquaintances and were used as means of obtaining both instrumental and emotional support. They did not, however, involve exploitation of state resources, but instead were exchanges of individuals’ own resources (such as time, money, skills, and living spaces). Some of such exchanges are documented in Lonkilla’s study of Russian and Finnish teachers’ daily routines (1997; 1999), as well as in Caldwell’s study of Moscow soup kitchens (2004). Both studies emphasize that support networks for Russians were an important resource that helped them to manage lives in the stressful, low-income environment in which many found themselves during economic reforms.

Social support networks are well documented in Western literature. The findings suggest that groups experiencing the stress of cultural and economic adjustment (for example, immigrants) and groups having access to fewer financial resources (for example, African-Americans in the United States) tend to have greater rates of reliance on social support networks. This suggests that perhaps informal exchange and mutual support in economic life are more likely to flourish in low resource environments irrespective of the economic system. It also suggests that the link between the use of social networks in economic activities in Russia during the Soviet period and their use
during the period of market reforms is spurious and was in both cases caused by a scarcity of resources.

Clarke and his colleagues (Clarke 2000; Clarke and Kabalina 2000) offer a different approach to the Soviet legacy argument. They claim that the patronage systems that were established between management and workers in the Soviet period have caused the surge of network use in the labor market in the 1990s. Clarke claims that labor relations in Russia are feudalized, that is, workers’ relations with employers are similar to the relations between medieval feudal lords and their peasants. He finds from the interviews with managers that they need to trust their employees (sometimes because they use practices that run counter to the law); thus, employees’ personal loyalty becomes prized above their other skills. Clarke suggests that this preference for loyalty over professional skills leads to dependent relationships between employers and workers that run counter to the principle of market exchange. He also emphasizes that these dependent relationships finds their roots in the Soviet system’s grounding of managerial power not in formally defined rules, but in informal personal relationships. Clarke concludes that the Russian labor market will reach full closure in the near future. He warns that employers looking for loyalty from employees would hire workers almost exclusively through personal contacts, thus limiting the social mobility of those who do not have good contacts.

There are several reasons to consider predictions about the imminent closure of the Russian labor market premature. First of all, the proportion of jobs found through personal networks in Clarke’s own report of the findings from three surveys (Clarke
2000)\textsuperscript{26} is comparable to the levels found in the United States and other industrial
countries with market-based economies which vary somewhere between 50\% and 60\%.\textsuperscript{27} Moreover, another study (Gerber and Mayorova 2007) with a national representative
sample of workers found that by 2001 the percentage of all new jobs (excluding intra-
firm job changes) found via personal ties increased to about 59\% (see Figure 2.1
above)—that is, it is within the typical percentage found in market economies.\textsuperscript{28}

Second, the logic behind preservation of the old patronage system would require
the state-owned organizations and companies that did not experience a change in
ownership during the reforms to adhere to the patronage system more diligently and,
thus, to fill vacancies through personal networks more often than do private enterprises.
However, Clarke (Clarke 1999; Clarke and Kabalina 2000) and other researchers (Gerber
and Mayorova 2007) find that reliance on personal networks is much greater in the newly
created private sector rather than in the organizations and companies that retained their
state ownership status. This suggests that there is something about the new sector, rather
than about the remnants of the old economic system, that makes employers hire through
networks.

Third, qualitative interviews with private sector managers (Clarke and Kabalina
2000) show growing dissatisfaction with the practice of hiring through close personal

\textsuperscript{26} In one of the surveys, Clarke shows 44\% of first jobs and 61\% of all other new jobs acquired between
1992 and 1997 were found through personal ties. The second survey shows 55.9\% and 52.5\%, respectively.
The third survey, conducted in April-May 1998, shows 61\% and 67\%. The large difference between the
three surveys in the reported percentages may be due to differences in sampling procedures. The third
survey’s results are based only on the jobs respondents held at the time of the survey, while the first two
surveys collected data on all jobs a respondent held between 1992 and 1997. None of the three studies
reported by Clarke (2000) have nationally representative samples.

\textsuperscript{27} See discussion of the studies in Chapter 1.

\textsuperscript{28} See discussion of the studies in Chapter 1.
ties, as it does not allow employers to enforce discipline effectively. The authors suggest that hiring through personal connections is a natural course taken by newly founded private firms—but one which firms grow out of as they expand because management of larger organizations requires more formalized policies and structures.

Fourth, Russian employers name the same reasons for avoiding the services provided by so-called market intermediaries as do their Western counterparts. Clarke and Kabalina (2000) report that Russian employers are dissatisfied with the high numbers and frequently poor qualifications of job applicants they receive when information about vacancies is distributed through employment agencies and advertisement, as it takes more resources to screen out unqualified workers. Rees (1966) and Rees and Shultz (1970) report that American employers also find that the pools of job candidates generated by advertisement and employment agencies are often inappropriate and involve more screening costs. Such similarity in the experiences of Russian and Western employers suggests that, despite the loyalty rhetoric Russian employers may use, the main logic behind their choice in favor of social networks is nevertheless rational, calculating, and in line with the orientation toward cost-saving that is typical of profit-making companies in market economies.

Fifth, closure and segmentation of the labor market would be possible only if hiring were done primarily through strong ties. It is strong ties that promote clustering, segmentation, and isolation in networks, whereas weak ties induce global connectivity of networks and the free flow of information and resources (Granovetter 1973). A study of the kinds of social ties that lead to successful job searches, conducted by Yakubovich
shows that in Russia weaker—not stronger—ties increase the likelihood of finding a job. Clarke (1999, Chapter 5) also reports that a higher percentage of jobs is found through friends, neighbors, co-workers, and fellow students than through kinship and family ties.

Moreover, I would argue that the social networks in which Russians are embedded are probably very well-suited for dissemination of information about available vacancies without causing social exclusion and segmentation. Many students of Russia have noted that Russians tend to value and develop close, long-lasting relationships (e.g. Chamberlain 1995; Puffer and McCarthy 1995; Wilson and Donaldson 1996). Some researchers argue that networks in Russia tend to be centered around strong ties and highly clustered in a manner similar to networks “observed among inner-city ghetto residents in the US” (Spencer 2003, p.73). Others explain that because of their experience with political repression, Russians have learned to trust and deal only with individuals whom they know very well, mainly kin and close friends (Guseva and Ronat Tas 2001). I would argue, however, that so far these claims have not been substantiated by systematic empirical studies and that the opposite may be true: Russians have networks that span far beyond kin and close friends.

Ethnographic studies typically emphasize that in Russia, individuals’ lives center around the workplace and that this was especially true during the Soviet period (Clarke 1999; Lonkila 1997; Spencer 2003). Because work-based social ties are considered to be

29 The same type of claim is made about East Germany’s social networks (Volker and Flap 2001).
weak, not strong, ties which in turn prevent the formation of tight cliques (Granovetter 1973), one can safely conclude that the personal networks of Russians do not facilitate network closure. The blat exchanges described by Ledeneva (1998) are also directly related to individuals’ workplaces. Teachers, doctors, and persons in various other occupations become the centers of blat networks; they form the centers of networks that are rich in the structural holes (Burt 1992) that enable mediated relationships and promote global connectivity. The principles of delayed and unequal reciprocity in blat exchanges noted by Ledeneva (1998) may also allow for interactions among individuals from different income levels and social status groups, thus producing more heterogeneous networks. Furthermore, survey data show that the networks of Russians are well suited for the dissemination of information. Gibson (2001), in a comparative research of seven countries (Bulgaria, Hungary, Poland, Russia, France, Spain, and the United States) conducted from 1995 through 1996, showed that in comparison to individuals from other countries the network of an average Russian is not small (Russia is in the middle of the distribution of network size) and that the ties of an average Russian tend to be rather weak (Russia is at the lower end of the distribution of tie strength).

30 In principle, one may argue that workplace interactions can produce close and strong ties, especially if coworkers are encouraged to interact intensively with members of their labor collective. But no matter how intensive the workplace interaction, with most workplaces having a much larger number of individuals than do kinship networks, it is practically impossible for one person to support intensive relationships with a majority of the colleagues, clients, suppliers, and customers he or she meets in the workplace. Given that individuals are constrained in the number of personal relationships they can support, it is also true that the larger the network, the smaller its density (network density is the proportion of existing ties among all possible ties).
Networks as a Response to Institutional Change

Drastically increased reliance on personal networks in the search for employment opportunities in Russia during its transition to a market-based economy has been linked by some researchers to increased uncertainty. For example, Yakubovich and Kozina (2000) point out that networks matter more in a transitional society because there is heightened uncertainty of market activities due to the breakdown of state institutions and the lack of fully functioning market institutions. Educational credentials and work experience acquired during the Soviet era are no longer considered valid predictors of an employee’s performance by private employers, yet new ways of assessing workers’ qualifications take time to develop. This causes an institutional vacuum in which employers seek information on potential employees through social ties. Gerber and Mayorova (2007) also refer to uncertainty, but they argue that reliance on networks is part of the market; it is inevitable under market economy conditions, where private employers face greater budget constraints—unlike state managers, who work under the labor shortage conditions of a centrally planned economy. The uncertainty in this case comes not because market institutions are lacking, but because uncertainty is an inevitable consequence of running a private enterprise.

I consider the institutional vacuum and social capitalism perspectives to be more plausible. Contrary to Clarke’s assertion, Russian employers are not trying to retain the old patronage system based on personal relationships when they hire through personal networks; they are learning to be “social capitalists” (Fernandez, Castilla, and Moore 2000, p. 1289) who take advantage of the resources their and their employees’ personal
connections can offer to deal with the macro-economic and institutional changes taking place in modern Russia.

I believe the use of social networks in Russia’s labor market will not lead to its closure. If anything, the personal connections acquired during and since the Soviet period are well suited for the transfer of information and influence in the labor market because these connections tend to center around a person’s workplace and, thus, are bound to facilitate the accumulation of weak and heterogeneous ties. It is not the Soviet legacy of taking advantage of personal relationships for economic gain that causes employers to hire through personal networks, but rather changes in the economic context in which employers find themselves when they decide how to hire new employees. Changes in the economic context (such as growing rates of unemployment and sweeping economic decline) would result in increased reliance on networks in any industrialized society because they create an environment of greater uncertainty, higher risks, and costlier mistakes to employers. Social networks tend to reduce uncertainty and risks by providing vital in-depth information and creating bonds of mutual obligation, two benefits that markets as such often fail to deliver. I argue that it is more important for students of modern Russia to investigate not the legacies of the old economic system, but the ongoing structural changes in the Russian economy. More specifically, it is important to investigate how changes in the macro-economic conditions brought about by the institutional transformation have affected the significance of social ties in the labor

31 See Yakubovich (2001) for an application of ideas by Polanyi (1957) on three modes of resource allocation (redistribution, exchange, and reciprocity) to the study of the Russian labor market showing that reciprocal relations may function as a support structure for failure in either market exchange or hierarchical redistribution.
market and how they have affected the stratification benefits of finding jobs through social networks.

**Regional Factors and the Use of Social Networks in Job Search**

Given the evidence of social networks’ being important in all types of economic systems, I will assume that social networks are a normal and unavoidable part of economic activities in any society with any type of economy because economic activity as such tends to be embedded in social relationships (Granovetter 1985). However, the specific use of social ties in a particular country (be it the way networks are used, by whom and how often, and to what stratification outcomes reliance on networks leads) depends on a combination of macro-level factors, some of which I will investigate in this dissertation. In this section, I will review the macro-level changes that took place in Russia between 1985 and 2001. By linking existing theories on job search processes to the Russian case, I will explain how and why these changes may have affected the level of network use in job search.

The main determinants of labor market dynamics are the supply of labor and, conversely, the demand for labor. Thus, to understand how regional-level conditions influence the use of networks in job search, it is necessary to examine how changes in the regional economy affect the behavior of both job seekers and employers seeking workers. There are several methods by which job applicants and jobs can be matched: direct application, social networks, state and private employment agencies, administrative assignment, and advertisement. Of these, direct application and social networks have
been generally acknowledged as requiring the least cost and effort on the employer’s part, while advertisement and private employment agencies mean additional costs to the employer. Little is known about the economic costs of administrative assignments; it is reasonable to suggest that employers may benefit economically from this method when there are fewer workers than jobs, but not when it is the other way around.

Lee in his study of the unemployed (1987) points out that tightness of the labor market determines who has the bargaining power in the labor market: the buyer or the seller of labor, employer or workers. In this study, I will assume that the method of matching jobs to applicants is mostly driven by the demand side of the labor market (see Figure 2.2)—that is, by the employers’ needs and the constraints they have to face, rather than by the job seekers’ preferences—while also acknowledging that workers’ job search strategies are more important in predicting individuals’ success in the search process. In market economies, typically, the markets are loose (there are more workers than jobs); this means employers tend to have the upper hand in choosing recruitment methods. If employers for any reason prefer to search for qualified workers through networks, then

![Figure 2.2. Relationship between Macro-Level Context and Finding a Job through Personal Networks.](image-url)
workers who rely on personal ties to get jobs will be able to find the best jobs. A worker may prefer to search for a job using advertisements or employment agencies, and he or she may be very skilled in using these resources; however, advertisements and employment agencies will not have information on the best jobs if this is not where employers channel it. Conversely, a person may have all the necessary ties to a large number of people, who potentially may have information on top quality vacancies, but employers may have formal procedures installed so that information on vacancies is distributed only through advertisement or employment agencies or via direct application on-line. Employers also may have strictly formalized application submission process and discourage putting in a good word for someone to the point of hurting one’s chances of getting a job. In this case, the use of social ties may be neither welcome nor useful, and the chances of getting a job are not influenced by whether one learns about it from an acquaintance or from an advertisement. If it is usually employers’ choices that determine dominant recruitment methods, then it is reasonable to suggest that the process linking macro-level conditions to the method of search by which an individual finds a job is mediated above all by the way the macro-economic context influences employers’ choices of methods of search for qualified job applicants. That is, when the effect of macro-level factors on the use of networks in the job search is considered, I assume that the primary theoretical interest should lie in explaining the way these factors affect employers’ choices and only secondarily how they may affect workers’ choices.
Social Capitalism

In the first chapter, I discussed some major macro-level factors, the importance of which is emphasized in the contemporary literature on personal network use in job search. These factors include unemployment level, economic prosperity versus economic decline, institutional setting, and the size of organizations participating in the economy. What makes the Russian labor market an interesting subject for research on this topic is that just recently the Russian economy has undergone major institutional and economic restructuring. Between 1992 and 2001, all of Russian regions experienced change in the

![Figure 2.3. Percentage of Employed in the Private Sector for Russia's Regions, 1985-2001.](image)

Figure 2.3. Percentage of Employed in the Private Sector for Russia's Regions, 1985-2001.  

32 Goskomstat, 2001. Ten autonomous okrugs, Chechnya, and Ingushetia are excluded. Autonomous okrugs are excluded to avoid a double count because their data are included in the data of the larger regions they
levels of privatization, but the regions varied dramatically in the amount of change (see Figure 2.3). A drastic switch in preferred job search strategies to personal networks has also been explained by the very economic reforms that established new rules and changed the set of constraints for the majority of enterprises faced: state owned enterprises were replaced by private enterprises (Gerber and Mayorova 2007). That is, the dominance of either the public or the private sector in a given society may explain existing job search strategy preferences.

Not all forms of organization, however, are bound by profit-seeking motives and hard budget constraints. State-run organizations, unlike their private counterparts, are not structured by the profit motive. Economic efficiency may not be an appropriate goal for organizations that are expected to provide public services which cannot be provided by the private sector. Instead, adherence to institutionalized routines, “myth and ceremony” (Meyer and Rowan 1977), guides the behavior of such organizations. Public organizations do not have to deal with the hard budget constraints of private organizations, so cost-saving rationales may not be as attractive to public organizations as they are to private employers. Furthermore, although the use of networks in job search requires an individualized approach to each candidate, for publicly owned organizations any personal approach taken by officials may be viewed by the public as favoritism and corrupt practice that undermines the non-redistributive constraint placed on public organizations. Institutionalized routines are thus intended to ensure that offices in public

---

are parts of. Chechnya and Ingushetia are excluded because data for these regions are mostly missing in the Goskomstat’s data set.
bureaucracies are occupied by qualified candidates, improve bureaucratic efficiency, and provide legitimacy to an organization.

Thus, the differences in organizational form may produce differences in the degree of network use. Indeed, research has shown that organizations in the public sector are less likely to use referrals than are private businesses (Clarke and Kabalina 2000; Marsden 1996). It is possible then, that the use of personal networks in the labor market is higher in the regions with larger private sectors. This is, however, contingent on the degree to which the state bureaucracy interferes with the job matching process. In a centrally planned economy, the state bureaucracy may choose to control the process of matching workers with jobs by means of administrative assignment of jobs to workers. As Bian (1997) describes, under these conditions an individual might be tempted to manipulate the system by changing his or her assignment if for some reason the assignment is not satisfactory. Because such interference with the system of job assignments is considered illegal, officials in charge of assignments have to be approached through personal ties and, particularly, through strong personal ties. Under such institutional arrangements, jobs in state owned companies and organizations are also likely to be found through personal ties. However, personal ties in these cases do not serve to convey information about the job and job seeker. Instead, they are used to convey the trustworthiness of the participating parties, to provide assurances that discreet information about an illegally conducted reassignment will not go beyond the participants, and to ensure that punishment for illegal actions will be avoided.
On the other hand, privately owned companies and organizations in a market-based economy may be limited in their use of social networks when state bureaucracies or other organizations regulate how and through what channels information about vacancies is to be distributed. Private companies may be required to report a certain proportion of vacancies to employment agencies. The law may also require employers to advertise vacancies, especially when hiring foreign workers or when the rights of minority groups are being protected. In addition, trade unions may push for more formal hiring practices than employers would ordinarily prefer. In each of these cases, even if employers were to benefit from hiring through personal referrals, they would have to forgo such opportunities to meet externally imposed demands. In sum, we would typically expect to see personal ties used to find jobs more often in a labor market dominated by private employers and less often in a labor market dominated by state-owned companies and organizations. That relationship may be reversed if state bureaucracies or strong trade unions were to get involved in the process of matching workers with jobs. In Russia during the studied period, however, interference by the state bureaucracy was minimal under both the centrally planned economy and the transition to a market economy. The expectation about the relationship between private sector size and network use should, therefore, be in the original direction. That is, the larger the region’s private sector, the more likely a new job is to be found through social networks.

Sector is an important factor to consider in predicting the process of organizational decision making. Yet sector often correlates with other important organizational characteristics such as organizational size and the level of
bureaucratization (Blau and Schoenherr 1971). Government-run organizations tend to be larger in size and have greater levels of bureaucratization than do private organizations. The majority of private companies as small businesses and often remain small. Privatization processes in Russia took two major routes. The first route was privatization of already existing state enterprises, many of which were large factories, plants, construction firms, and natural resource extraction companies. Second, new private enterprises were founded. Typically, these were small businesses in retail, consumer services, and real estate. The number of small businesses has grown steadily since the law

---

Footnote: 33 Goskomstat, 2001. Ten autonomous okrugs, Chechnya, and Ingushetia are excluded. In 1996, the definition of small businesses was changed.
on cooperatives was passed in 1988 and has continued to grow since privatization of state enterprises began in 1992 (see Figure 2.4). The average percentage of workers employed by small businesses throughout Russia’s regions has stabilized to around 7-8%, which is much lower than, for example, the average in the United States. Nevertheless, regional variation in small business sector size is quite high, with some regions just above zero and others well above 25%.

Organizational literature points out that small businesses tend to be less differentiated and less bureaucratized than larger organizations (Blau 1972; Granovetter 1984), and also less likely to have personnel departments to develop formal hiring and selection rules (Pfeffer and Cohen 1984). Small businesses generally seek the cheapest means available to recruit workers. They are less likely to have resources and procedures that would allow them to select well-qualified workers from the very large pool of job applicants that would typically be available to them if information about vacancies were distributed to job seekers through advertisement and employment agencies. Small companies and especially startup companies very often rely on entrepreneurial networks for financial and labor force resources to start their businesses and keep them afloat (Aldrich 1999). The growth of the small business sector was bound to have an effect on the dominant methods of job search in Russia as the small business sector began to take over a significant share of the labor market. In regions in which a higher share of the labor market is employed by small business, we would therefore expect to find a higher proportion of jobs found through personal ties.
Privatization triggered a tremendous restructuring of Russia’s economy. Among other changes, levels of unemployment and inflation grew, while levels of production and standard of living fell. Unemployment rates have clearly gone up since 1991 (see Figure 2.5). Some regions managed to keep their unemployment rate under 10%, while in other regions unemployment rose to as much as 50%. To a labor market that had experienced labor shortages for decades, job shortages were a big shock. It compelled both employers and workers to change their search strategies.

Figure 2.5. Unemployment Rate for Russia's Regions, 1985-2001.\textsuperscript{34}

\textsuperscript{34} Goskomstat, 2001. Ten autonomous okrugs, Chechnya, and Ingushetia are excluded.
Networks and Economic Depression

The 1990s were a period of severe economic recession in Russia. The economic recession began with galloping rates of inflation and subsequent reduction in the levels of production and wages. Figure 2.6 shows how drastic the drop in average regional wages was. In 1992, average wages were about three times lower than wages were in 1990, the year before state controls on wages were removed. Despite some economic recovery and a subsequent increase in average wages, in 2001 adjusted for inflation average wages remained at only about half of what they were in 1990. During the 1990s, enterprises had to face not only high levels of inflation, but also loss of state funding and contracts, disruption of the networks of suppliers, loss of customers and markets, and deficit of financial credit. All of these factors created severe financial pressures on Russian enterprises. Under these types of pressures, employers become more vulnerable to financial losses and, therefore, more aware of the heightened risks of making an ill-advised hiring decision. Thus, they would be more interested in obtaining in-depth information about the skills and performance of prospective workers before hiring them. Under severe financial pressure, employers might also be more interested in maintaining control over the labor force, as even slightly looser discipline and slightly lower productivity may mean financial losses that could lead eventually to bankruptcy. To reduce the already high risks and costs of hiring workers during conditions of economic depression, employers will be more likely to rely on social networks in their search for new employees.
As discussed in Chapter 1, existing studies suggest that economic recession and unemployment are positively related to the use of social networks. It is clear that in the period between 1985 and 2001, there were changes in the rates of economic development and unemployment, as well as in levels of privatization. I argue that it was these changes that brought about changes in the methods of recruitment. Russian regions have varied widely in unemployment rates and average wages (see Figures 2.4 and 2.5). I expect that the use of personal networks in job search will be higher in regions with higher levels of unemployment, as well as in regions that experience economic depression.

---

Networks Filling Institutional Vacuum

Yakubovich and Kozina (2000) argue that the institutional transition in Russia also created a vacuum in the ways employers assessed workers’ qualifications. Employers often could not use job applicants’ education and experience to judge their qualifications because any experience acquired by working for a state-run enterprise in the former centrally planned economy was often perceived as unsuitable for a profit-oriented firm in the new market economy. The education and experience of the majority of workers did not include knowledge and skills necessary for operating under market conditions. At the same time, new qualifications criteria were not fast to develop. Acquiring education and work experience takes years, as does an employer's learning what credentials and what kind of experience under the new conditions can predict workers’ future performance. Experiencing high degrees of institutional uncertainty, employers as rational actors seek some means of achieving satisfactory levels of certainty about employees' future performance. Yakubovich and Kozina argue that social ties may become very valuable for this purpose because they facilitate trust, mutual obligations, and the transfer of in-depth information about workers.

Given the data set used in this study, I have limited opportunities to test this claim by analyzing cross-regional differences. One possibility, however, is an analysis of the temporal dynamics in the levels of network use in the labor market. Transition from one set of economic relations and institutions to another is by definition expected to be a temporary phenomenon. At some point in time, new rules and procedures should emerge out of transitional chaos and permit the institutional vacuum to be replaced by new
institutions that are more appropriate for the new economic relations. I can test if the use of personal networks in getting jobs over time followed a curvilinear pattern, whether it went up in 1992 and then began to decline at some point before 2001.

Regional Factors and Effect of Network Use in Job Search on Search Outcomes

So far I have discussed how macro-level factors affect the likelihood that social ties will be used to get jobs. What is probably more noteworthy to students of Russia interested in social networks is how macro-level factors influence the stratification outcomes of those workers who find jobs through personal ties. As was discussed in Chapter 1, even though many researchers predicted that better quality jobs would be found through social networks, empirical findings produced mixed results. I argue that the relationship between finding a job through personal ties and job quality depends on the macro-level context (see Figure 2.7).

Research on social networks in the Russian labor market has found a positive link between the use of social networks in job search and job quality. Clarke (1999) finds that after reforms began, better paid jobs in the private sector and management positions were more likely to be filled through personal ties. In a study of jobs found between 1985 and
2001, Gerber and Mayorova (2007) find a weak but positive effect of finding a job through personal ties on occupational earnings, on the likelihood of finding a job in the private sector where wages are higher, and on the likelihood of an employee’s receiving wages on time.\(^{36}\)

Economic recession tends to be accompanied by higher levels of unemployment. As was discussed above, both of these factors increase the significance of personal ties to the labor market activities. When jobs are scarce and the labor force is oversupplied, neoclassical economists predict that employers will lower workers’ wages, thus bringing supply and demand in balance. What has been found by sociologists, however, is that instead of lowering wages, employers increase demands on workers’ qualifications (Clarke 2000). Such qualifications may include not only worker’s skills and work

---

\(^{36}\) One of the persistent problems of the Russian labor market during the transition has been wage arrears. See Gerber (2006) for more on that.
experience, but also worker’s personality, manners, and intentions. All of this constitutes a kind of intensive information that can come only through personal connections.

I expect that the relationship between the use of network ties in job search and job quality will be positive and strong in the Russian regions with greater levels of economic recession and unemployment. I expect economic growth will increase the use of networks in job search because there will be many startup companies, which tend to rely on entrepreneurial networks for all kinds of resources, including labor force. However, in the regions with growing economies, the relationship between the use of networks in the labor market and job quality will depend on whether startup companies pay higher wages. It may happen that in the regions with fast growing economies this relationship will be stronger than in the regions with modest economic growth because growth occurs in sectors or occupations with higher pay and higher prestige.

**Summary**

In this chapter, I have provided relevant historical and economic background on Russia with a focus on the labor market situation during the Soviet period as well as during the market reform. I have also discussed the role social networks played in economic activities during the Soviet period and current theories explaining the consistently growing role of networks with respect to job mobility during market reforms. Research on social networks in Russia tends to see them as a legacy of the old economic and political system. I, however, have argued that current macro-level changes in the
economy are responsible for the growing significance of personal ties in the Russian economy.
CHAPTER 3. RESEARCH METHOD AND DATA DESCRIPTION

In this chapter, I describe the data sets, statistical methods, and variables I use to test competing hypotheses about the influences of macro-level factors on network use in the labor market and the consequences of such use. The main goal of this dissertation is to test how economic and institutional context makes a difference in how social capital works at the individual level. In particular, I am interested in how levels of privatization, employment by small business, unemployment, and economic prosperity across Russia’s regions influence the likelihood of finding jobs through social networks. I am also interested in how these factors affect the kinds of jobs that are found through social networks and in the kinds of social stratification outcomes that arise from network use in job search. Hierarchical models (also known as multilevel or mixed-effects models) are the models best suited for contextual quantitative analysis because they allow an estimation of the effects at both individual and contextual level.

Data

I use two data sets to test my hypotheses pertaining to network use in job search and regional context. For individual-level data (level-1), I use job history data from the Survey of Stratification and Migration Dynamics in Russia (SSMDR)\textsuperscript{37}, and for regional-level (level-2) data, I use regional macro-economic data from Goskomstat (2002).

\textsuperscript{37} Also see a description of the SSMDR data set in Gerber and Mayorova (2007).
Job History Data

SSMDR data were collected in three waves (September 2001, November 2001, and January 2002) as part of bi-monthly monitoring surveys conducted by the All-Russian Center for Public Opinion Research (VCIOM). The data are based on multi-staged cluster samples drawn in 40 of Russia’s 79 regions, excluding autonomous okrugs. A special block of questions was added to the three monitoring surveys to obtain detailed employment/job histories extending from December 1984 to the time of the survey. Because some respondents migrated during the period between 1985 and 2002, there are more than 40 regions included in the job history data, but these regions are not included in the analysis due to the small number of new jobs in each of them. A range of information on up to five jobs obtained by respondents since December 1984 was collected, including when the job began and ended; the primary means by which the job was found; the occupation; the employment type (self-employed versus hired); and the industry, size, and sector of the work place. For respondents who reported having held more than five jobs between 1985 and the time of the survey, information on the last five jobs, including the job held at the time of the survey, was gathered.

The job history data set contains a total of 8424 new jobs that began at some time between January 1985 and January 2002, but not all of them were included in the analysis. The jobs that involved self-employment and transfers within the same organization were excluded from this data set, since self-employment is often treated as

---

38 There is a total of 71 new jobs found in 16 regions outside of the sampled regions.
39 If respondent was not employed at the time of the survey, the information was gathered on the most current five jobs.
an exit from the labor market (Gerber and Mayorova 2007) and intra-organizational transfers involve internal hierarchical processes rather than labor market processes. Only the jobs for respondents of working age (ages 19-54 for women and ages 18-59 for men\textsuperscript{40}) were included in the data set. Some of the jobs were obtained outside of the Russian Federation (either in the former Soviet Republics or abroad), and in three cases information on the region in which a job was obtained is missing; these jobs were not included in the analysis. Similarly, any cases with missing data on how a job was found were excluded from all analyses. The total number of new jobs obtained on the Russian labor market by 3439 working-age individuals during the period between January 1985 and December 2001 comes to 6417. In addition to collecting information on the new jobs’ characteristics, the SSMDR collected information on respondents’ background, which is discussed in the section on variables.

The job history data produced by the SSMDR are retrospective. Retrospective design, while it is cost efficient and very useful at providing long-range longitudinal data, still has its disadvantages, the most notable of which is a sampling bias due to workers’ mortality. Another source of bias in retrospective data is the potentially low quality of recalled information. Recall bias may result from either memory lapses or intentional misrepresentation of the past, or both. To assess the impact of recall errors on estimates of labor market dynamics, a few studies compared job histories collected by retrospective surveys to panel data (Brewer and Paull 2005; Manzoni and Luijkx 2007; Paull 2002). These studies report that the majority of respondents provide information on employment

\textsuperscript{40} In Russia, the retirement age for women is 55; for men it is 60.
events and job characteristics consistently in both methods of data collection. Major recall mismatches in retrospective design data occur in the reporting of non-employment status: self-employment tends to be misclassified as paid employment; unemployment can be misclassified as time out of the labor force; and short periods of non-employment tend to be underreported, making employment duration longer. Previous studies report that the accuracy of recalled data depends on three major factors. The first factor is how recent the event is: the more recent, the more accurate the recall. The second factor is the number of events in a job history: the more events, the more chances for errors. The third factor is the length of an event: shorter job history events tend not to be reported and are often subsumed in other events. As a result of these three factors, retrospective design increases the length of job history events and reduces transition rates.

Given the previous findings on the quality of retrospective data, the SSMDR retrospective job history data appear to provide a fairly reliable source of data for the purposes of my study. First of all, I will not analyze here the most problematic (in terms of recall accuracy) job history events such as non-employment. Furthermore, job histories were collected only for the 16 years prior to the time of the survey, which is a relatively short period compared to typical 25 to 35 year long careers. Specialists in the studies of network use in the Russian labor market (for example, Clarke 1999, Clarke and Kozina 2000, Yakubovich 2005, Yakubovich and Kozina 2000) so far have not reported Russian respondents’ attaching a negative stigma to the use of personal ties in finding a job in either the Soviet or the post-Soviet period. This suggests that, overall, Russian
respondents would have no reason to distort their answers about network use in job search in either period.

While the results of the analyses based on SSMDR data still have to be interpreted with caution due to the unavoidable biases of retrospective design, they nevertheless present a great opportunity to study labor market dynamics in Russia during the Soviet and post-Soviet periods. With Russia continuing to move away from centrally planned economic relations, the data on the Soviet period in future studies will have to be retrospective because large surveys of individuals' labor market activities simply were not conducted during that time. But the more time passes, the worse will be the quality of data; this makes SSMDR data one of the most reliable sources of information on labor dynamics in Russia during the transitional period to date.

Regional Data

In Chapter 2, I have identified four major macro-level factors that may influence the likelihood of network use in job search and the outcomes of such search by increasing the risks and costs of job matching process to employers: the size of the private sector, the size of the small business sector, unemployment rate, and economic performance. To test whether these factors indeed have an effect on the way network ties function in the labor market, I use regional statistics published in 2002 by the State Statistical Committee of the Russian Federation, or Goskomstat. Goskomstat is Russia's federal statistical service agency. Their data are collected by various state offices and then aggregated at the regional and national level.
The data set includes information on 89 of Russia's regions for the years 1985 and 1991 through 2001. From this dataset, I use seven indicators: percent employed in the private sector, percent employed by small businesses, percent unemployed, average reported wages, average income per capita, volume of production, and consumer price index. I adjust average wages, regional income per capita, and volume of production values for inflation using Goskomstat’s region-specific consumer price indexes, and I express these three indicators in 1985 constant rubles. Goskomstat’s data for autonomous okrugs are incorporated into the data on the regions of which they are a part.41 To avoid a double count, ten of Russia’s autonomous okrugs are not treated as independent regional units, but instead are assigned the code of the larger region to which they belong.

Some regions have been excluded or have had their codes reassigned, while for other regions missing data were replaced. Chechnya and Ingushetia have been excluded from the analysis because reliable data for them are largely absent due to military action taking place for a significant part of the studied period. As a result, 11 new jobs were deleted from the job-level data set for these regions, lowering the total number of new jobs to 6406. For some regions, information on the size of the private and small business sectors was missing for years 1988 through 1991. The data for these regions were replaced based on the average standard deviations from the all-Russian mean for years 1992 until1993, when the data for these regions became available.

41 There are six types of constituent territories in Russian Federation: republic, krai, oblast, federal status city (Moscow and St. Petersburg), autonomous oblast, and autonomous okrug. Each has a different level of autonomy from the federal government. Autonomous okrugs are constituent territories, but they are also parts of larger regions (krai or oblast). Traditionally, Goskomstat has included autonomous okrugs’ statistics in the statistics of the larger region of which they are a part. At present, there are only 83 constituent territories, given that six out of ten autonomous okrugs have lost constituent territory status since 2001.
Having a longitudinal set of data raises the issue of appropriate time units. SSMDR job history records use months as time units, while Goskomstat’s data are reported on annually. Given that, a year appears to be the most appropriate unit of time for this study. Thus, the survey data and regional data are matched based on the region and the year in which a new job was found, and the macro-level units of analysis in this study are not simply regions, but region-years.

**Hierarchical Models**

To test my hypotheses on how larger economic and institutional context influences the use of social networks in the labor market and the labor market outcomes of such usage, I incorporate two levels of data in my analysis: job level data and regional level data. To analyze such data appropriately, I employ hierarchical linear models and hierarchical binomial models, depending on the nature of the dependent variable in a specific model.

Hierarchical structure is in place when units of analysis at the lower level are nested within units of analysis at the higher level. For example, individual-level units such as students may be seen as nested within schools. The number of levels can vary depending on the study’s needs. The regional data analyzed in the first two chapters are longitudinal, which means that new jobs are nested not only within regions, but also within years simultaneously, and neither region nor year can be nested one within another. In such cases, the data are not strictly hierarchical, since new jobs can be cross-classified by regions and years. Appropriate models in this situation are cross-classified hierarchical models (see Figure 3.1) in which lower-level units are allowed to belong to a
combination of higher level units (Raudenbush and Bryk 2002, Chapter 12). In cross-classified models, the level-2 variable is presented by a matrix with one variable (for example, region’s names) appearing as a row and the other variable (for example, years) as a column. The variance in such models is partitioned into a within-cell component and a between-cell component, the latter of which is partitioned into variance between rows (for example, regions), variance between columns (for example, years), and a residual variance between cells.

![Diagram of Region, Year, and New Job](image)

Figure 3.1. A New Job is Nested within Region and Year

For continuous dependent variables, a cross-classified model at the job-level can be written as:

\[
Y_{ijk} = \pi_{0jk} + \sum \pi_{pjk} a_{ijk} + e_{ijk} \quad [3.1]
\]

where \(Y_{ijk}\) is a predicted value;
\(\pi_{0jk}\) is an intercept;
\(\pi_{pjk}\) are coefficients for job-level characteristics;
$a_{ijk}$ are job-level characteristics for region $j$ in year $k$;
$e_{ijk}$ is the job-level random effect, which is normally distributed around zero.

And at the region-year level, it can be written as:

$$
\pi_{pjk} = \theta_p + \sum B_p X_j + \sum \gamma_p W_k + b_{p0j} + c_{p0k} + d_{pjk} \tag{3.2}
$$

where $\theta_p$ is an intercept, the expected value when all other predictors are set to zero;
$\beta_p$ are coefficients for regional characteristics, assumed constant over all years;
$X_j$ are regional characteristics;
$\gamma_p$ are coefficients for time characteristics, assumed constant over all regions;
$W_k$ are time characteristics;
$b_{p0j}$ is regional random effect, assumed constant over all years;
$c_{p0k}$ is year random effect, assumed constant over all regions;
$d_{pjk}$ is region-by-year random effect.

I use hierarchical linear regression with crossed random effects in Chapter 5 in the
analysis of the network effect on the size of the new work place. In Chapter 4 and also in
the analysis of the network effect on the new job’s sector in Chapter 5, my dependent
variables are coded as binary. Therefore linear hierarchical regression is not
appropriate.\footnote{Detailed description of the dependent variables follows below.} When a dependent variable is discrete, a logit link function can be used to
constrain predicted values to the interval between 0 and 1. While the level-2 model for
binomial hierarchical regression with crossed random effects remains the same as in
equation 3.2, the level-1 equation changes to:

$$
\eta_{ijk} = \log \left( \frac{\phi_{ijk}}{1 - \phi_{ijk}} \right) = \pi_{0jk} + \sum \pi_{pjk} a_{ijk} \tag{3.3}
$$

where $\eta_{ijk}$ is a predicted log of the odds of success;
$\phi_{ijk}$ is the probability of success;
$\pi_{0jk}$ is an intercept;
$\pi_{pjk}$ are coefficients for job-level characteristics;
$a_{ijk}$ are job characteristics.

Because a logit link function is used here to estimate a level-1 model, the level-1 random error is not normally distributed. It is heteroscedastic and is assumed to equal $\varphi_{ijk}(1 - \varphi_{ijk})$, where $\varphi_{ijk}$ is the probability of success (Raudenbush and Bryk 2002). In some cases—when, for example, clustering of level-1 units exists or the level-1 model is misspecified—the actual level-1 variance can be smaller or larger than the assumed. HLM software provides estimates of a scalar variance component to detect under- and overdispersion.

Two kinds of models can be estimated using binomial hierarchical regression: unit-specific and population-average (Raudenbush and Bryk 2002; Raudenbush, Bryk, Cheong, Congdon, and du Toit 2004). Under the unit-specific model, the level-2 random effects are held constant and a coefficient for a variable A indicates the difference between log-odds of success for a one-unit change in A, holding other predictors and level-2 residuals at zero. The population-average model does not hold level-2 random effects constant, but rather estimates the difference in the log-odds for the entire population without respect to level-2 residuals. I report the unit-specific results since only unit-specific models allow testing of hypotheses on how level-2 effects vary across level-2 units. To fit multilevel models, I use the hierarchical linear modeling program HLM 6.04 (Raudenbush, Bryk, and Congdon 2005). The method of estimation is full maximum likelihood.
Since some respondents have two or more new jobs, there is a chance that clustering on the individual may influence the estimates. Unfortunately, HLM 6.04 does not allow adjustment of standard errors for clustering at level-1 in estimates of cross-classified hierarchical models; nor does it provide the estimates with robust standard errors. To monitor for clustering in the case of binary dependent variables, I estimate overdispersion, which tends to occur when clustering of data takes place (Raudenbush et al. 2004). I also perform residual diagnostics to test the assumptions of independence and normality required by hierarchical regression models with crossed random effects.

The analysis of current wages in Chapter 6 does not require modeling of cross-classified random effects because the wage data are not longitudinal. The level-1 unit in this set of analyses is an individual because each person reported wages only for one primary job he or she held at the time of the survey. In Chapter 6, I use two-level hierarchical linear regression. The job-level model can be written as:

$$Y_{ij} = \beta_{0j} + \sum \beta_{pj} X_{ij} + r_{ij}$$  \[3.4\]

where $Y_{ij}$ is a predicted value;
- $\beta_{0j}$ is an intercept;
- $\beta_{pj}$ are coefficients for individual-level characteristics;
- $X_{ij}$ are job-level characteristics for region $j$;
- $r_{ij}$ is the job-level random effect, which is normally distributed around zero.

And at the regional level, it can be written as:

$$\beta_{pj} = \theta_{p} + \sum \gamma_{p} W_{j} + u_{pj}$$  \[3.5\]

$^{43}$ The number of jobs obtained by one individual ranges from 1 to 5. The total number of people with more than one job is reported below.
where $\theta_p$ is an intercept, the expected value when all other predictors are set to zero; $\gamma_p$ are coefficients for regional characteristics; $W_j$ are regional characteristics; $u_{pj}$ is regional random effect.

**Variables**

The key variable of this study is the method of search through which a new job was found. In some analyses it is used a dependent variable; in others I use it as an independent variable. The original survey question asked respondents: *How did you find this job?* I have recoded responses to this question as a binary variable with value one if a job was found through social networks (see translated questionnaire in Appendix A) and zero for all other methods of search. If a respondent chose response 7 or 9, the job was excluded from the sample of new jobs as an activity outside the labor market. For 284 new jobs, the information on the search method that produced them is missing. These cases are excluded from the analysis, leaving a total of 6,051 new jobs reported by 3,365 respondents in the sample. 1777 respondents have one new job in the data set, 862 respondents have two new jobs, and 726 respondents have three or more new jobs. 2115 jobs are current jobs, that is, jobs held by respondents at the time of the survey.

As was mentioned in Chapter 1, studies show that two characteristics of a social tie are intricately related and have implications for stratification outcomes. The first is the kind of tie that is used. Typically, researchers are interested in whether the tie through which a job was found is strong or weak. The second is the kind of help that was received through the tie: information about an available vacancy or influence over an employer’s decision. It is argued that weak ties tend to be more beneficial when success in the labor
market depends on getting better quality information about job vacancies, because weak ties are more capable of delivering diverse information than are strong ties (Granovetter 1974). On the other hand, strong ties can be more beneficial when career success depends on ability to influence employer’s hiring decision (Bian 1997). Unfortunately, I cannot test these claims because the SSMDR dataset contains no information on the type of tie used to find a job, the occupational status of the person assisting with job search, and the kind of help received. Some researchers claim that, in centrally planned economies, workers tend to use personal ties to influence employers’ hiring decisions rather than for the purpose of gaining useful information about available vacancies (Bian 1997; Volker and Flap 2001). Even if this is the case for some countries, in this study I will not make any assumptions about the kind of assistance received from the social tie or the kind of tie that was used to get the job in Russia since there is no up-to-date systematic empirical evidence to substantiate such claims regarding the use of personal networks in the Russian labor market and the present dataset does not include information on the kind of assistance received through social contacts. Future studies, on the other hand, may want to address these claims by scrutinizing the characteristics of the social ties used to find jobs in Russia that are not available in the SSMDR data set.

**Dependent Variables**

The method of search variable will serve in this study as a dependent variable when I investigate how macro-level factors influence the likelihood of finding a job through personal networks (Chapter 4). Method of search will serve as an independent variable in
all other sets of analyses (Chapters 5 and 6). As mentioned above, it is coded as a binary variable with value one standing for a job found through personal ties or networks.

In Chapter 5, I test whether the link between network use and the kind of job one finds depends on regional macro-economic indicators. Two dependent variables are used here: the sector and the size of the new work place. The sector of the work place is coded as a binary variable with value one assigned to a privately owned or privatized firm/organization and category zero assigned to a state owned firm/organization. The size of the work place is measured as the number of employees. I use a natural log transformation of the firm’s/organization’s size because the distribution of this variable is highly skewed. In Chapter 6, I investigate how macro-economic factors influence the effect of network use on stratification outcomes such as wages. In this analysis, my dependent variable is logged wages. The variable is the natural log transformation of the wages for the jobs held by respondents at the time of a survey. The wages received at the time of the survey are reported in rubles and are not adjusted for inflation. To control for possible differences in wages between the three waves of the survey due to inflation, I introduce into the models binary variables to indicate the survey wave.

*Level-1 Independent Variables*

The focus of this study is on regional level effects. Controlling for job-level and individual-level characteristics, however, is essential for obtaining unbiased estimates. Gerber and Mayorova (2007) have conducted an analysis of personal network use in job search with a focus on individual and job characteristics. I use their findings as a starting
point when I include level-1 fixed effects in my models, but I also add a few variables that they have not considered. The full list of job-level variables and descriptive statistics are presented in corresponding empirical chapters.

Previous research suggests that gender, Communist Party (CP) membership, education, and age may have an effect on the quality of personal networks and their ability to provide information about jobs. It is reasonable to suggest that in a large city one may have larger and more diverse networks rich in weak ties—that is, networks that are more likely to deliver information about available vacancies. A person who has lived in a region longer has probably had more time to develop local personal connections that would be helpful in job search than has a person who just moved into the region. To address these possible influences on the likelihood of using personal ties and benefiting from such use, I introduce into the models several job-level controls. First, I include as job-level controls two time-invariant variables for the respondent’s gender and membership in the Communist Party (CP) in 1991. I also include as job-level controls several time-variant individual characteristics: age, education, city size (natural log of population size), length (in years) of residence in the region. Three binary variables measure the respondent’s education—VUZ degree, SSUZ degree, \(^{44} \) and incomplete secondary education—with secondary education, vocational school degree, and

---

\(^4 \) A VUZ degree is a five-year degree from a higher education institution. It is roughly equivalent to a four-year bachelor’s degree in the United States for some majors; for others it is the equivalent of a master’s or professional (law, medical, or engineering) degree. An SSUZ degree is a two or three year specialized secondary education roughly equivalent to an associate’s degree in the United States.
Table 3.1. Summary of Variable Coding.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories and Units</th>
<th>Variables</th>
<th>Categories and Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Job-Level Variables</strong></td>
<td></td>
<td><strong>Regional Level Variables</strong></td>
<td></td>
</tr>
<tr>
<td>A New Job Found through Networks</td>
<td>Yes=1</td>
<td>Regional Private Sector Size</td>
<td>Percent</td>
</tr>
<tr>
<td>Female</td>
<td>No=0</td>
<td>Logged Regional Small Business Sector Size Ln(Percent)</td>
<td></td>
</tr>
<tr>
<td>CP Member in 1991</td>
<td>Member =1</td>
<td>Logged Percent</td>
<td>Ln(Percent)</td>
</tr>
<tr>
<td>CP Membership Missing</td>
<td>Missing=1</td>
<td>Logged Economic Performance Index</td>
<td>Ln(Points)</td>
</tr>
<tr>
<td>VUZ Degree</td>
<td>Yes=1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSUZ Degree</td>
<td>No=0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incomplete Secondary Education</td>
<td>Yes=1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Centered at 18</td>
<td>Years-18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logged Years the Region</td>
<td>Ln(Years in the region)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logged City Size</td>
<td>Ln(Number of residents)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City Size Missing</td>
<td>Missing=1</td>
<td>Economic &amp; Institutional Change</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not missing=0</td>
<td>Measures:</td>
<td></td>
</tr>
<tr>
<td>Prior Status is Student</td>
<td>Yes=1</td>
<td>Private Sector Size Percent</td>
<td></td>
</tr>
<tr>
<td>Prior Work Status is Employed</td>
<td>Yes=1</td>
<td>Small Business Sector Percent</td>
<td></td>
</tr>
<tr>
<td>Job Tenure</td>
<td>No=0</td>
<td>Economic Performance Points</td>
<td></td>
</tr>
<tr>
<td>New Job is in Private Sector</td>
<td>Yes=1</td>
<td>Index</td>
<td></td>
</tr>
<tr>
<td>Logged Work Place Size</td>
<td>No=0</td>
<td>Percent Unemployed Percent</td>
<td></td>
</tr>
<tr>
<td>Logged Wages</td>
<td>Ln(Number of employees)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 2001 Wave</td>
<td>Yes=1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>January 2002 Wave</td>
<td>No=0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\* Mean of 17 regional values centered on all-Russian annual means.

\* All-Russian annual means.
incomplete higher education in the base category. The city size and respondent’s length of residence are continuous variables. Because of the high skewedness of their distributions, I use their natural log transformations in the analysis. CP membership and city size have some missing data. The missing data are replaced with zeros for CP membership and with mean values for the city size. Two corresponding binary variables control for missing data replacement.

Another important factor when it comes to network use in the labor market is respondent’s status immediately prior to finding a new job. As was discussed in Chapter 2, VUZ graduates in the past often received their first jobs through the assignment procedure. That, no doubt, lowered their chances of finding a job through personal ties. Employment immediately prior to getting a new job may indicate that a job was found through what Granovetter (1974) terms “non-search”—that is, a situation in which a worker does not intentionally seek a new job, but learns about a new career opportunity accidentally. In such cases, Granovetter argues, the job is very likely to be found based on information passed through personal contacts, and it is more likely to lead to better stratification outcomes such as higher wages. To control for post-VUZ assignment and non-search, I use two binary variables indicating respondent’s status immediately before finding a new job: (1) prior status is student and (2) prior status is employed. In the analysis of wages, I also control for job tenure. Table 3.1 summarizes coding of the variables.
Level-2 Independent Variables

From Goskomstat’s data on Russia’s regions I use the following economic characteristics: percent unemployed, percent employed in the private sector, percent employed by the small businesses, mean wages, income per capita, and volume of industrial production. The last three indicators are converted into constant 1985 rubles based on the region-specific consumer price index.

To investigate the time trends of network use in Chapter 4, I use two approaches. First, I use two time functions—expressed by a linear year function (the number of years since the Soviet period, where the Soviet period is held constant at zero) and its square term—to test predictions made by the Soviet legacy approach and by the institutional vacuum approach. Second, I use national-level annual means of the six characteristics of regional economies (percent unemployed, percent employed in the private sector, percent employed by small businesses, mean wages, income per capita, and volume of industrial production) to investigate time trends in network use as predicted by the social capitalism approach. Because the last three measures of economic performance are highly correlated, I factor analyze them to create an index of annual economic performance (see Table 1 in Appendix B). That is, in this study I use four time-level variables: the size of the private sector, the size of the small business sector, the unemployment rate, and the economic performance index. I use these national-level annual means in the analyses in Chapter 5, as well. I do not use annual variables in Chapter 6 because wage data are

45 The national-level annual means are based on the data set. This means that my annual all-Russian data does not necessarily coincide with the annual all-Russian indicators reported by Goskomstat since regions contribute to the national indicators unequally and I do not have the necessary data to apply appropriate weights. The annual means are based on 77 Russia’s regions with ten autonomous okrugs, Chechnya, and Ingushetia excluded.
available only for the jobs respondents held at the time of the survey—that is, because wage data are not longitudinal.

To investigate regional effects in Chapters 4 and 5, I use the same six variables as mentioned above but in a different way. In order to avoid possible conflation of variance between temporal and regional measures, I created regional measures that are invariant across time by centering all regional variables on the corresponding annual national-level means. Because in different years the same region does not necessarily have the same centered values, I obtain an average of all centered values across 17 years for each region. For example, for the unemployment rate in year 1, region A can have centered value 4 (4% above the annual mean for all regions); in year 2, 2 (2% above the annual mean for all regions); in year 3, 6 (6% above the annual mean for all regions). Then region A’s unemployment rate is 4: \((4+2+6)/3\)=4, or 4% above the annual unemployment rate on average over three years. All six regional variables (percent unemployed, percent employed in the private sector, percent employed by small businesses, mean wages, income per capita, and volume of industrial production) are transformed in this manner. The last three variables are used in the factor analysis to produce the regional level economic performance index (see Table 2 in Appendix B). Because of the high degree of skewedness in their distributions, I use natural log transformation for the following three regional variables: percent employed in the small business sector, percent unemployed, and the economic performance index.

All descriptive statistics are reported in empirical chapters because the number of cases included in each analysis varies depending on the missing data for the dependent
variable. All analyses are conducted in several steps. In general, I introduce control
variables first, then I model level-2 variables to test hypotheses about time and/or
regional effects, and, finally, I identify the best fitting model and conduct appropriate
regression diagnostics on that model. To reduce unnecessary model complexity, at each
step I remove effects that were not found statistically significant in the preceding step.

Summary

To test hypotheses about contextual effects on the network use in the Russian labor
market and on the consequences of network use for stratification outcomes, I combine
job-history data from the Survey of Stratification and Migration Dynamics in Russia
(SSMDR) and regional economic data reported by the State Statistical Committee of the
Russian Federation (Goskomstat) for years 1985 through 2001. I model temporal and
regional effects by means of cross-classified hierarchical regression. I control for a
number of job-level characteristics, including characteristics of the persons receiving
jobs.
CHAPTER 4. REGIONAL CONTEXT AND TEMPORAL DYNAMICS IN THE USE OF PERSONAL TIES IN JOB SEARCH

In this chapter, I test the theories that explain the increase in significance of network ties in the labor market in Russia since the beginning of market reforms. The dependent variable in all of the models discussed in this chapter is a binary variable measuring whether a new job was found through social ties (relatives, friends, or acquaintances) or through other means. I use hierarchical binomial regression to test the models. I begin by modeling job-level controls and proceed to modeling temporal and regional fixed effects.

Hypotheses

The Soviet legacy approach currently dominates the research on social networks in the Russian labor market. It views the use of social networks in the labor market as a remnant of the co-dependent, seemingly feudalistic relationships that existed between workers and employers during the Soviet period. As a proponent of this approach, Clarke (2000) predicts that the proportion of jobs found through personal networks will only grow under market reforms until the labor market reaches its closure—that is, until the vast majority of jobs are found exclusively through personal ties. By 2001, the closure of the Russian labor market was not yet reached. Only 59% of the jobs were found through social ties. This number is within the range of “normal” for industrialized Western
countries (see Chapter 2 for discussion). But I can test whether the use of networks was on the rise throughout the post-Soviet period as Clarke predicts.

*Hypothesis 1.1*: Since the start of Russia’s transition to a market economy in 1992, the chances of finding a job through social networks are increasing from year to year, net of other effects.

The institutional vacuum approach (Yakubovich and Kozina 2000) suggests that increased significance of personal ties in the labor market is a temporary phenomenon caused by the destruction of the old system of evaluating workers’ qualifications and the absence of a new system. The increased reliance on personal ties is thus expected during the period of institutional transition. Over time, however, market participants (in the case of the labor market, workers and employers) would establish new systems of assessing qualifications, and the need for personal networks would eventually subside.

*Hypothesis 1.2*: The chances of finding a job through social networks increase at the start of the transition to market economy, but in a few years they decrease.

Unlike the previous two approaches, the social capitalism perspective sees the increased significance of networks in the Russian labor market as an expected result of developing market-based economic relations. Privately owned firms and organizations do not have the same cushions of external support to protect them from failure and minimize financial risks and costs that state-owned firms and organizations have. Poor hiring decisions may eventually lead private firms to bankruptcy and dissolution, while this is hardly the case for state-owned firms. Private employers capitalize on the social ties of their current employees because these ties allow the employers to improve the quality of their candidate pools and obtain reliable, in-depth information about potential employees.
at a low cost (see detailed discussion in previous chapters). If it is private employers who capitalize on the social ties of their employees when searching for new job candidates, then the timeline for network use in OB search will depend on changes in the private sector size.

*Hypothesis 1.3: The larger the private sector in a given year, the more likely a job is to be found through personal ties, net of other effects.*

In another important institutional change that occurred in Russia, market reforms also gave rise to the small business sector. Small businesses tend to be less differentiated than larger organizations (Blau 1972; Granovetter 1984) and less likely to have personnel departments to develop formal hiring procedures and selection rules (Pfeffer and Cohen 1984). Considering this, they are very likely to rely on personal networks as a less formal and less costly means of recruiting workers. If small businesses are more likely to hire through networks, then growth of the small business sector is bound to make personal networks an increasingly important method of job search.

*Hypothesis 1.4: The larger the small business sector in a given year, the more likely a job is to be found through networks, net of other effects.*

Privatization of the economy shifted the balance of supply and demand aspect of labor from a shortage of labor to a shortage of jobs. When jobs are scarce, employers receive a higher volume of applications. Moreover, a greater number of applications comes from candidates who do not qualify for the job at all or qualify for the job equally. Under these circumstances, hiring decisions are more difficult and the costs of reviewing applications are higher when unemployment is higher. As a result, to save time and
money and also to obtain in-depth information on qualifications of employers are increasingly motivated to use personal ties to fill the vacancies.

Hypothesis 1.5: The higher the unemployment rate in a given year, the more likely a job is to be found through networks, holding constant region and other effects.

The transition from a centrally planned economy to a market-based economy in Russia was followed by an economic crisis, a drastic drop in industrial production, hyperinflation, and falling wages. Under conditions of economic crisis, the pressure on employers to avoid financial losses by making better hiring decisions is greater than when the economy is flourishing. In such situations, employers regard personal ties as invaluable sources of low cost, high quality, and in-depth information about job candidates.

Hypothesis 1.6a: The higher the economic performance in a given year, the less likely a job is to be found through networks, net of other effects.

On the other hand, economic growth may stimulate a rise in entrepreneurial activities in the private sector and creation of new businesses. To build their new business, entrepreneurs tend to rely on their own personal networks for resources, including financial and human resources (Aldrich 1999). That is, economic growth may have not a negative, but rather a positive effect on network use in the labor market due to increased levels of entrepreneurial activity.

Hypothesis 1.6b: The higher the economic performance in a given year, the more likely a job is to be found through networks, net of other effects.
Hypotheses 1.4 through 1.6 make statements about the effects of privatization, small business sector growth, unemployment, and economic performance on network use in job search over time. Yet the same factors may explain differences in network use across regions:

**Hypothesis 1.7**: The larger the private sector in a given region, the more likely a job is to be found through personal ties, net of other effects.

**Hypothesis 1.8**: The larger the small business sector in a given region, the more likely a job is to be found through networks, net of other effects.

**Hypothesis 1.9**: The higher the unemployment rate in a given region, the more likely a job is to be found through networks, holding constant region and other effects.

**Hypothesis 1.10a**: The higher the economic performance in a given region, the less likely a job is to be found through networks, net of other effects.

**Hypothesis 1.10b**: The higher the economic performance in a given region, the more likely a job is to be found through networks, net of other effects.

To test the above hypotheses, I employ binomial hierarchical regression with crossed random effects because the dependent variable of whether a job was found through social networks or not is a binary outcome; because level-1 units (new jobs) are cross-classified by region and year; and because I am interested in modeling level-2 random and fixed effects for both regions and years.

There are total of 6051 new jobs cross-classified within 40 regions and 17 years. Means and standard deviations for all variables included in the analysis appear in Table 4.1. There are 14 job-level variables. Of the new jobs in the sample, 47% were found through personal networks. 54% of the new jobs were found by women, 8% by CP
members, 24% by VUZ degree holders, 26% by SSUZ degree holders, and 6% by individuals with incomplete secondary education. The average age at the time of getting a new job is 31 years. About 16% of the new jobs were obtained by recent graduates of educational institutions and about 36% of the jobs were found by employed individuals. Time level variables come in two sets: time functions and measures of economic and institutional change. To test the claims of the Soviet legacy approach, I use a time function, which equals to year minus 1991. To test the institutional vacuum approach, I use the linear time function and its square term. There are four time-level measures of economic and institutional change: private sector size, small business sector size, unemployment rate, and economic performance index. The size of the private sector is measured as the mean annual percentage of workers employed in that sector across all regions. The size of the small business sector is measured in the same way. I do not model the time changes in network use during the Soviet period by holding the log-odds of network use during 1985-1991 constant. In the models with linear and curvilinear year functions, I set the Soviet period years to zero. In the case of institutional and economic measures, I hold values for the Soviet period constant at their means for 1985-1991. The private and small business sector sizes during the Soviet period are held constant at 1.13%, the unemployment rate is held at 0.01%, and the economic performance index is held at 1.11 points.46

46 Even though privatization began only in 1992, legislation on cooperatives was approved in 1988. In this study, cooperatives are treated as private firms. The unemployment rate in the Russian Federation was not reported until the creation of the State Employment Agency in 1991. The unemployment rate is set to the official rate of zero for years 1985 through 1990. The average unemployment rate for Russia’s regions in 1991 is 0.09%.
Table 4.1. Descriptive Statistics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Job Level Variables (N=6051):</strong></td>
<td></td>
<td></td>
<td><strong>Time Level Variables (N=17):</strong> a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Found through Networks</td>
<td>0.47</td>
<td>0.50</td>
<td>Private Sector Size</td>
<td>22.06</td>
<td>19.14</td>
</tr>
<tr>
<td>Woman</td>
<td>0.54</td>
<td>0.50</td>
<td>Small Business Sector Size</td>
<td>5.68</td>
<td>4.23</td>
</tr>
<tr>
<td>CP Member in 1991</td>
<td>0.08</td>
<td>0.27</td>
<td>Unemployment</td>
<td>6.13</td>
<td>5.85</td>
</tr>
<tr>
<td>CP Membership Missing</td>
<td>0.00</td>
<td>0.04</td>
<td>Economic Performance Index</td>
<td>0.00</td>
<td>0.98</td>
</tr>
<tr>
<td>VUZ Degree</td>
<td>0.24</td>
<td>0.43</td>
<td><strong>Regional Level Variables (N=40): b</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSUZ Degree</td>
<td>0.26</td>
<td>0.44</td>
<td>Private Sector Size</td>
<td>0.00</td>
<td>4.18</td>
</tr>
<tr>
<td>Incomplete Secondary Education</td>
<td>0.06</td>
<td>0.24</td>
<td>Logged Small Business Sector Size</td>
<td>1.01</td>
<td>0.54</td>
</tr>
<tr>
<td>Age Centered at 18</td>
<td>12.69</td>
<td>10.25</td>
<td>Logged Unemployment</td>
<td>1.26</td>
<td>0.41</td>
</tr>
<tr>
<td>Logged Years in the Region</td>
<td>2.98</td>
<td>0.87</td>
<td>Logged Economic Performance Index</td>
<td>0.66</td>
<td>0.38</td>
</tr>
<tr>
<td>Logged City Size</td>
<td>12.67</td>
<td>2.57</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City Size Missing</td>
<td>0.10</td>
<td>0.30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior Status is Student</td>
<td>0.16</td>
<td>0.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior Work Status is Employed</td>
<td>0.36</td>
<td>0.48</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( ^{a} \) All-Russian annual means from the regional data.

\( ^{b} \) Regional data centered on all-Russian annual means.
There are four regional level variables, all of which are centered on the annual national average and then averaged across 17 years to obtain time-invariant regional measures (see Chapter 3 for details). Due to the distribution’s skewedness, I use natural log transformations for the percentage employed in the regional small business sector, the regional percentage unemployed, and the regional economic performance index in this analysis. Table 4.1 presents the means for the regional data.

Results

I begin by reporting results for the fully unconditional model, which specifies no predictors at job-level, time level, or regional level and which allows the intercept to vary across years and regions. I do not include in any of the models here the random effect associated with region-by-year interactions because the region-by-year cell sizes in most cases are too small to allow reliable estimates. The fully unconditional mixed model, which combines level-1 and level-2 models, is

\[ \eta_{ijk} = \theta_0 + b_{00j} + c_{00k}, \]  

where \( \eta_{ijk} \) is the log-odds that a new job \( i \) is found through personal networks in region \( j \) and in year \( k \). Because the results reported here are unit-specific (see Chapter 3 for an explanation), \( \theta_0 \) is the expected log-odds of a new job’s being found through personal ties in a typical region and in a typical year—that is, when random effects \( b_{00j} \) and \( c_{00k} \) equal zero. Level-1 variance for a binary dependent variable is heteroscedastic and equals \( \varphi_{jk}(1 - \varphi_{jk}) \), where \( \varphi_{jk} \) is the probability of getting a job in the private sector (Raudenbush
Random effects $b_{00j}$ and $c_{00k}$ are assumed normally distributed with mean at zero value and variances $\tau_{b00}$ and $\tau_{c00}$ respectively.

The fully unconditional model estimates the magnitude of random variation in the use of social ties in the labor market across regions and time. The intercept is the average log-odds of getting a job through networks across all regions and all years. The estimated intercept for the unconditional model is -0.243 with a standard error of 0.107.\textsuperscript{47} That is, for a region and year with a typical rate of jobs found through networks (for regions and years with a random regional effect of zero), the expected log-odds of getting a job through networks is -0.243, which corresponds to an odds of $\exp(-0.243)=0.784$ and a probability of $1/(1+\exp(0.243))=0.440$. This probability is slightly lower than the population-wide probability of 0.470 reported in the descriptive statistics (see Table 4.1). The difference between the population mean and the estimates of the units-specific model is expected, and it is due to the nonlinear relationship between the log-odds and the probability of finding a job through personal ties where the log-odds are distributed normally, but the probability distribution is positively skewed.\textsuperscript{48} The estimated values of the random regional and random time components for the unconditional model are 0.094 and 0.135 respectively.\textsuperscript{49} Based on these values, I can calculate intra-class correlations. The intra-regional correlation (the correlation between network use outcomes for two new jobs in the same region but in different years) is estimated to be $(0.094/(0.094+0.135+1))= 0.076$. The intra-year correlation (the correlation between

\textsuperscript{47} This model is not shown in the tables.
\textsuperscript{48} See Raudenbush and Bryk (2002, Chapter 10) for more.
\textsuperscript{49} Both are statistically significant at 0.001 level, two-tailed tests.
network use outcomes for two new jobs in the same year but in different regions) is estimated to be \(0.135/(0.094+0.135+1)=0.110\). That is, 7.6% of the variation in network use in job search lies between regions, and 11% of the variation lies between years.

**Modeling Job-Level Controls**

In the next step, I add job-level controls to the model. The mixed model, which combines level-1 and level-2 models, can be written as

\[
\eta_{ijk} = \theta_0 + \theta_{1jk}(\text{Woman})_{ijk} + \theta_{2jk}(\text{CP Member})_{ijk} \\
+ \theta_{3jk}(\text{CP Member Missing})_{ijk} + \theta_{4jk}(\text{VUZ Education})_{ijk} \\
+ \theta_{5jk}(\text{SSUZ Education})_{ijk} + \theta_{6jk}(\text{Incomplete Secondary Education})_{ijk} \\
+ \theta_{7jk}(\text{Age})_{ijk} + \theta_{8jk}(\text{(Logged Years in the Region)})_{ijk} - \bar{X}_w \\
+ \theta_{9jk}(\text{(Logged City Size)})_{ijk} - \bar{X}_c \\
+ \theta_{10jk}(\text{City Size Missing})_{ijk} + \theta_{11jk}(\text{Prior Status is Student})_{ijk} + \theta_{12jk}(\text{Prior Status is Employed})_{ijk} \\
+ b_{00j} + c_{00k}, \tag{4.2}
\]

where \(\eta_{ijk}\) is the log-odds of finding a job through personal networks; \(\theta_0\) is the intercept; \(\theta_{ijk}\) are coefficients for job-level variables; \(\bar{X}_w\) is a grand mean for a job characteristic; \(b_{00j}\) is regional level random variance, \(b_{00j} \sim N(0, \tau_{000})\); \(c_{00k}\) is time level random variance \(c_{00k} \sim N(0, \tau_{c00})\). All level-1 slopes are fixed in the interest of parsimony. Natural log of city size and natural log of years in the region are centered at their grand means because zero values are not meaningful for these variables since for both of them all observed values are above zero.

The results for Model 1 in Table 4.2 show that CP membership, VUZ and SSUZ degrees, length of residence in the region, and employment status immediately prior to changing jobs do not have a statistically significant effect on the log-odds of finding a new job through personal ties. All other variables with the exception of the natural log of
city size have negative effects on the dependent variable. Model 2 (Table 4.2) includes only the statistically significant controls.\textsuperscript{50} Being a woman, lacking secondary education, and having student status prior to getting a job are each associated with lower relative odds of getting a job through personal ties of \(\exp(-0.093)=0.911\), \(\exp(-0.357)=0.700\), and \(\exp(-0.414)=0.661\) respectively, holding the other predictors and random effects at zero. Each year increase in age reduces the log-odds of getting a job through personal ties by 0.008; that is, one year increase in age is associated with a relative odds of \(\exp(-0.008)=0.992\), holding the other predictors and random effects at zero. Only the natural log of city size has a positive effect on the use of networks in job search: each unit increase in the natural log of city size is associated with a higher relative odds of \(\exp(0.072)=1.075\), holding the other predictors and random effects at zero. The introduction of job-level controls affected both of the random components. Compared to the random variance components in the unconditional model, the random variance among regions is reduced from 0.094 to 0.075, and the random variance between years is reduced from 0.135 to 0.128. Reduction of the regional random component by 20% can be attributed to controlling for the natural log of city size where a new job was found.\textsuperscript{51} Regions in the Russian Federation do vary greatly in the number and population size of cities, towns, and villages.

\textsuperscript{50} I excluded non-significant level-1 fixed effects only after I tested for slope heterogeneity and found no evidence that these level-1 effects vary across either regions or time. For continuous variables, I also tested to determine whether the fixed effect is nonlinear.

\textsuperscript{51} The same amount of random regional variance is reduced when only the natural log of city size is introduced into the model at level-1.
Time Analysis

In the next step, I test the Soviet legacy, institutional vacuum, and social capitalism approaches by estimating temporal changes in the use of personal networks in job search over 17 years. Models 3 and 4 test hypotheses 1.1 and 1.2 correspondingly.

Table 4.2. Binomial Regression Models with Crossed Random Effects and Job Level Controls for Job Search Method.

<table>
<thead>
<tr>
<th></th>
<th>Model 1 Coefficient</th>
<th>SE</th>
<th>Model 2 Coefficient</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.012</td>
<td>0.121</td>
<td>0.046</td>
<td>0.116</td>
</tr>
<tr>
<td>Fixed Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Level Controls:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman</td>
<td>-0.108***</td>
<td>0.055</td>
<td>-0.093*</td>
<td>0.054</td>
</tr>
<tr>
<td>CP Member in 1991</td>
<td>-0.111</td>
<td>0.103</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CP Membership Missing</td>
<td>-1.529</td>
<td>0.836</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>VUZ Degree</td>
<td>0.093</td>
<td>0.072</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SSUZ Degree</td>
<td>0.048</td>
<td>0.067</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Incomplete Secondary Education</td>
<td>-0.330**</td>
<td>0.124</td>
<td>-0.357**</td>
<td>0.119</td>
</tr>
<tr>
<td>Age Centered at 18</td>
<td>-0.009**</td>
<td>0.003</td>
<td>-0.008**</td>
<td>0.003</td>
</tr>
<tr>
<td>Logged Years in the Region) a</td>
<td>0.025</td>
<td>0.032</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Logged City Size a</td>
<td>0.070***</td>
<td>0.016</td>
<td>0.072***</td>
<td>0.016</td>
</tr>
<tr>
<td>City Size Missing</td>
<td>-0.024</td>
<td>0.099</td>
<td>-0.033***</td>
<td>0.099</td>
</tr>
<tr>
<td>Previous Status is Student</td>
<td>-0.393***</td>
<td>0.085</td>
<td>-0.414***</td>
<td>0.081</td>
</tr>
<tr>
<td>Previous Status is Employed</td>
<td>0.059</td>
<td>0.060</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Random Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Variance</td>
<td>0.129***</td>
<td></td>
<td>0.128***</td>
<td></td>
</tr>
<tr>
<td>Regional Variance</td>
<td>0.074***</td>
<td></td>
<td>0.075***</td>
<td></td>
</tr>
<tr>
<td>Number of Observations</td>
<td>6051</td>
<td></td>
<td>6051</td>
<td></td>
</tr>
<tr>
<td>BIC</td>
<td>17335.0</td>
<td></td>
<td>17283.2</td>
<td></td>
</tr>
</tbody>
</table>

*** p<.001 ** p<.01 * p<.05 (two-tailed test)
a Centered around grand mean b One-tailed test.
Model 5 tests hypotheses 1.3 through 1.6. The level-1 equation is the same for all six models and includes the following job-level controls from Model 2:

\[ \eta_{ijk} = \pi_{0jk} + \pi_{1jk}(\text{Woman})_{ijk} + \pi_{2jk}(\text{Incomplete Secondary Education})_{ijk} + \pi_{3jk}(\text{Age18})_{ijk} + \pi_{4jk}((\text{Logged City Size})_{ijk} - \bar{X}_{..}) + \pi_{5jk}(\text{City Size Missing})_{ijk} + \pi_{6jk}(\text{Prior Status is Student})_{ijk}, \]  

[4.3]

where \( \eta_{ijk} \) is the log-odds of getting a new job through personal ties; \( \pi_{0jk} \) is the intercept; \( \pi_{pjk} \) are fixed job-level effects; \( \bar{X}_{..} \) is a grand mean for a job characteristic.

The level-2 equations for the intercept in Models 3 and 4 include regional and temporal variance components and a corresponding time function:

Level-2 equation for Model 3:

\[ \pi_{0jk} = \theta_{0} + \beta_{01}(\text{Linear Increase Starting in 1992 Function})_{k} + b_{00j} + c_{00k}. \]  

[4.4]

Level-2 equation for Model 4:

\[ \pi_{0jk} = \theta_{0} + \beta_{01}(\text{Linear Increase Starting in 1992 Function})_{k} + \beta_{02}(\text{Squared Linear Increase Function})_{k} + b_{00j} + c_{00k}, \]  

[4.5]

where \( \beta_{0k} \) are fixed time-function effects, \( b_{00j} \) is the regional random variance, and \( c_{00k} \) is the temporal random variance.

The level-2 equation for Model 5 includes four annual measures of institutional and economic change as time-level fixed effects:

\[ \pi_{0jk} = \theta_{0} + \beta_{01}(\text{Annual Private Sector Size})_{k} + \beta_{02}(\text{Annual Small Business Sector Size})_{k} + \beta_{03}(\text{Annual Unemployment})_{k} + \beta_{04}(\text{Annual Economic Performance Index})_{k} \]
where $\beta_{0k}$ are fixed time-level effects. Level-1 variables do not vary across regions and time in the interest of parsimony.

Table 4.3 presents coefficients, standard errors, random components, the percentage of temporal random variance reduced if compared to Model 2, and BIC statistics for models 3 through 5. The linear increase model (Model 3) proposed by the Soviet legacy approach reduces the least amount of random time variance (83.9%) and has the worst fit to the data among the three models. Model 4 (which predicts an initial increase in network use followed by a consequent reduction in line with the institutional vacuum approach) reduces temporal random variance to a greater degree—by 93.5%—and has a better fit to the data than does Model 3. Both the main effect and the square term are statistically significant. The use of personal ties, according to this model, starts to go up in 1992, reaches its peak sometime around 1999 to 2000, and then begins a downward trend. Model 5 reduces 98.4% of random time variance and has a superior fit to the data. Only one variable in this model, however, has a statistically significant effect on the log-odds of finding a job through personal ties: the annual private sector size. A one percent increase in the size of the private sector in a given year increases the log-odds of finding a new job through personal ties by 0.017, which corresponds to an increase in relative odds by a factor of 1.017. The other three factors are not statistically significant.

Regression diagnostics suggest that the non-significant estimates for small business sector size, unemployment, and economic performance are most likely the result of multicollinearity. The three variables are strongly correlated with the size of the private
sector and each other over time. There is not enough variation in the annual data to estimate the longitudinal effects of private and small business sector sizes, unemployment, and economic performance on network use independently of each other. Small business growth was a desired outcome of privatization and went hand in hand with private sector growth, especially at the beginning of the reforms. Also privatization processes were accompanied by the economic decline and unemployment growth in Russia until almost the year 2000. Unfortunately, there is little to be done to fix the problem so I have to forgo tests of hypotheses 1.4, 1.5, 1.6a, and 1.6b until longitudinal data with more variation on the four measures become available. In this analysis, I can focus on the private sector size alone because privatization was the main institutional change that triggered the other institutional and economic changes in Russia. I re-estimate the model with the private sector size as the only time-level fixed effect (Model 6 in Table 4.3). Even though the private sector size alone reduces the random time variance slightly worse than the model with all four predictors (96.1% vs. 98.6%), it still fits the data better than either Model 3 or Model 4, lending support for the social capitalism perspective.

Figure 4.1 presents predicted the probabilities for getting a new job through personal ties from Models 3, 4, and 6 against the base line model with years as fixed effects (not shown in the tables). In this graph, I hold job-level controls at their mean values and random variances at zero. Both Model 4 and Model 6 predict the chances of finding a new job through personal ties close to the baseline model. Model 6 has only a
Table 4.3. Hierarchical Cross-Classified Binomial Regression: Specifying Longitudinal Fixed Effects for Method of Job Search.

<table>
<thead>
<tr>
<th></th>
<th>Model 3</th>
<th></th>
<th>Model 4</th>
<th></th>
<th>Model 5</th>
<th></th>
<th>Model 6</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>SE</td>
<td>Coefficient</td>
<td>SE</td>
<td>Coefficient</td>
<td>SE</td>
<td>Coefficient</td>
<td>SE</td>
</tr>
<tr>
<td>Intercept</td>
<td>-0.251**</td>
<td>0.095</td>
<td>-0.313***</td>
<td>0.090</td>
<td>-0.290*</td>
<td>0.122</td>
<td>-0.367***</td>
<td>0.089</td>
</tr>
<tr>
<td>Fixed Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Level Controls:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman</td>
<td>-0.094*</td>
<td>0.054</td>
<td>-0.096*</td>
<td>0.054</td>
<td>-0.097*</td>
<td>0.054</td>
<td>-0.095*</td>
<td>0.054</td>
</tr>
<tr>
<td>Less than Secondary Education</td>
<td>-0.360**</td>
<td>0.119</td>
<td>-0.357**</td>
<td>0.119</td>
<td>-0.359**</td>
<td>0.119</td>
<td>-0.356**</td>
<td>0.119</td>
</tr>
<tr>
<td>Age Centered at 18</td>
<td>-0.008**</td>
<td>0.003</td>
<td>-0.008**</td>
<td>0.003</td>
<td>-0.008**</td>
<td>0.003</td>
<td>-0.008**</td>
<td>0.003</td>
</tr>
<tr>
<td>Logged City Size</td>
<td>0.072***</td>
<td>0.016</td>
<td>0.073***</td>
<td>0.016</td>
<td>0.073***</td>
<td>0.016</td>
<td>0.073***</td>
<td>0.016</td>
</tr>
<tr>
<td>City Size Missing</td>
<td>-0.035</td>
<td>0.098</td>
<td>-0.035</td>
<td>0.098</td>
<td>-0.033</td>
<td>0.098</td>
<td>-0.031</td>
<td>0.098</td>
</tr>
<tr>
<td>Previous Status is Student</td>
<td>-0.416***</td>
<td>0.081</td>
<td>-0.417***</td>
<td>0.081</td>
<td>-0.417***</td>
<td>0.081</td>
<td>-0.413***</td>
<td>0.081</td>
</tr>
<tr>
<td>Time Level Effects:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear Increase Starting 1992</td>
<td>0.091***</td>
<td>0.012</td>
<td>0.188***</td>
<td>0.035</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Squared Linear Increase</td>
<td>-</td>
<td>-</td>
<td>-0.011**</td>
<td>0.004</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Annual Private Sector Size</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.017***</td>
<td>0.006</td>
<td>0.018***</td>
<td>0.002</td>
</tr>
<tr>
<td>Annual Small Business Sector Size</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.023</td>
<td>0.018</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Annual Percent Unemployed</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.015</td>
<td>0.019</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Annual Economic Performance Index</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.040</td>
<td>0.074</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Random Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Variance</td>
<td>0.021***</td>
<td>0.008**</td>
<td>0.002*</td>
<td>0.005*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Variance</td>
<td>0.074***</td>
<td>0.073***</td>
<td>0.072***</td>
<td>0.072***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Observations</td>
<td>6051</td>
<td>6051</td>
<td>6051</td>
<td>6051</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of Time Variance Reduced</td>
<td>83.9</td>
<td>93.5</td>
<td>98.4</td>
<td>96.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIC</td>
<td>17272.8</td>
<td>17277.6</td>
<td>17294.3</td>
<td>17268.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** p<.001 ** p<.01 * p<.05 (two-tailed test)

a Centered around grand mean b One-tailed test.
slightly better fit to the data than Model 4. Longitudinal data for years after 2001 could perhaps discriminate between the two models to a greater degree. Because the size of the private sector continued to grow, Model 6 would predict a further growth in network use after 2001. Model 5, on the other hand, shows that the peak of network use came on the years 1999 and 2000 and decline from that point on will continue irrespective of the changes in size of the private sector. Unfortunately, more current data on job search are not easy to find. As presented here, the results of the time analysis based on the SSMDR data set lend support decidedly in favor of the social capitalism perspective: the increase
in the use of personal ties in job search over time can be explained by the growth of the private sector.

**Regional Analysis**

Finally, I model the regional-level fixed effects on the likelihood of finding a job through personal ties (Table 4.4). Model 7 is based on Model 6 with four regional-level fixed effects added: the percent employed in the private sector, the logged percent employed in the small business sector, the logged unemployment rate, and the logged index of economic performance. All regional variables except the private sector size are centered at the grand mean because zero values are not meaningful in their cases (all values for these variables are above zero).

The mixed (combined) model with regional level measures can be written as follows:

$$
\eta_{ijk} = \theta_0 + \theta_{ijk}(\text{Woman})_{ijk} + \theta_{2jk}(\text{Incomplete Secondary Education})_{ijk} + \theta_{3jk}(\text{Age})_{ijk} \\
+ \theta_{4jk}(\text{Logged City Size})_{ijk} + \theta_{5jk}(\text{City Size Missing})_{ijk} \\
+ \theta_{6jk}(\text{Prior Status is Student})_{ijk} \\
+ \beta_{01}(\text{Annual Private Sector Size})_k \\
+ \gamma_{01}(\text{Regional Percent Employed in Private Sector})_j \\
+ \gamma_{02}(\text{(Logged Regional Percent Employed by Small Business)}_j - \overline{W}_j) \\
+ \gamma_{03}(\text{(Logged Regional Unemployment)}_j - \overline{W}_j) \\
+ \gamma_{04}(\text{(Logged Regional Index of Economic Performance)}_j - \overline{W}_j) \\
+ b_{00j} + c_{00k},
$$

where $\eta_{ijk}$ is the log-odds of finding a job through personal network; $\theta_0$ is the intercept; $\theta_{ijk}$ are coefficients for job-level variables; $\overline{X}_j$ is a grand mean for a job characteristic; $\gamma_{0j}$ are coefficients for regional level variables; $\beta_{01}$ is a coefficient for time level variable;
\( \bar{W} \) is a regional variable’s grand mean; \( b_{00j} \) is regional level random variance; \( c_{00k} \) is time level random variance. All level-1 slopes are fixed in the interest of parsimony.

The four variables reduce regional random variance from 0.072 to 0.053, or by 26.4%. But only the natural log of the regional small business sector size and the natural log of the regional economic performance index have statistically significant effects on the log-odds of finding a job through personal ties. The size of a region’s small business sector has a positive effect and region’s economic performance has a negative effect on chances of finding a new job through personal networks. These findings are consistent with hypotheses 1.8 and 1.10a. The private sector size coefficient is positive and the natural log of unemployment coefficient is negative. Neither of them is statistically significant. Therefore, the results do not show support for hypotheses 1.7, 1.9, or 1.10b.

In Model 8, I drop non-significant effects. The regional random variance component is slightly larger now: 0.55. That is, the two regional variables reduce the regional random variance by 23.6%. Model 8, however, has a better fit. A one unit increase in the natural log of the region’s small business sector size is associated with an increase in the log-odds of finding a job through personal ties by 0.202, or an increase in the odds by \( \exp(0.202) = 1.224 \), holding other variables and random effects at zero. Conversely, a one unit increase in the natural log of the region’s economic performance index is associated with a decrease in the log-odds of finding a new job through personal networks by 0.303, or a decrease in odds by \( \exp(-0.303) = 0.739 \), holding other variables and random effects at zero.
Diagnostics performed on the best fitting model (Model 8) do not reveal any major violations of the assumptions for binomial regression with crossed random effects. Both regional level and time level residuals are normally distributed. There is no correlation between any of the three types of residuals (job-level, region-level, and time level). Furthermore, none of the residuals are correlated with job-level fixed effects.

Table 4.4. Hierarchical Cross-Classified Binomial Regression: Specifying Regional Fixed Effects for a New Job Found through Networks.

<table>
<thead>
<tr>
<th>Model</th>
<th>Intercept</th>
<th>SE</th>
<th>Model 8</th>
<th>Intercept</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td></td>
<td></td>
<td>Coefficient</td>
<td></td>
</tr>
<tr>
<td>Model 7</td>
<td>-0.363***</td>
<td>0.087</td>
<td>Model 8</td>
<td>-0.358***</td>
<td>0.087</td>
</tr>
</tbody>
</table>

**Fixed Effects**

**Job Level Controls:**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>SE</th>
<th>Coefficient</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman</td>
<td>-0.094*</td>
<td>0.054</td>
<td>-0.095*</td>
<td>0.054</td>
</tr>
<tr>
<td>Less than Secondary Education</td>
<td>-0.358**</td>
<td>0.119</td>
<td>-0.357**</td>
<td>0.119</td>
</tr>
<tr>
<td>Age Centered at 18</td>
<td>-0.008**</td>
<td>0.003</td>
<td>-0.008**</td>
<td>0.003</td>
</tr>
<tr>
<td>Logged City Size</td>
<td>0.073***</td>
<td>0.016</td>
<td>0.074***</td>
<td>0.016</td>
</tr>
<tr>
<td>City Size Missing</td>
<td>-0.035</td>
<td>0.099</td>
<td>-0.042</td>
<td>0.099</td>
</tr>
<tr>
<td>Previous Status is Student</td>
<td>-0.408***</td>
<td>0.081</td>
<td>-0.410***</td>
<td>0.081</td>
</tr>
</tbody>
</table>

**Time Level Effects:**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>SE</th>
<th>Coefficient</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Private Sector Size</td>
<td>0.018**</td>
<td>0.002</td>
<td>0.018***</td>
<td>0.002</td>
</tr>
</tbody>
</table>

**Regional Level Effects:**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>SE</th>
<th>Coefficient</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Private Sector Size</td>
<td>0.003</td>
<td>0.014</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Regional Logged Small Business Sector Size</td>
<td>0.176</td>
<td>0.105</td>
<td>0.202*</td>
<td>0.093</td>
</tr>
<tr>
<td>Regional Logged Percent Unemployed</td>
<td>-0.092</td>
<td>0.146</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Regional Logged Economic Performance Index</td>
<td>-0.345</td>
<td>0.183</td>
<td>-0.303*</td>
<td>0.134</td>
</tr>
</tbody>
</table>

**Random Effects**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>SE</th>
<th>Coefficient</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Variance</td>
<td>0.005**</td>
<td></td>
<td>0.005*</td>
<td></td>
</tr>
<tr>
<td>Regional Variance</td>
<td>0.053***</td>
<td></td>
<td>0.055***</td>
<td></td>
</tr>
<tr>
<td>Number of Observations</td>
<td>6051</td>
<td></td>
<td>6051</td>
<td></td>
</tr>
<tr>
<td>Percent of Regional Variance Reduced</td>
<td>26.4</td>
<td></td>
<td>23.6</td>
<td></td>
</tr>
<tr>
<td>BIC</td>
<td>17299.7</td>
<td></td>
<td>17282.7</td>
<td></td>
</tr>
</tbody>
</table>

*p<.001  **p<.01  *p<.05 (two-tailed test)

a Centered around grand mean  b One-tailed test.
There is also no evidence of clustering of the job-level residuals: scalar variance is estimated at 0.994 value, which is nearly 1.0.

Summary

In this chapter, I tested four explanations of the increased significance of network ties in the labor market in Russia since the beginning of that nation’s market reforms. To test the models, I used hierarchical binomial regression on a binary variable measuring whether a new job was found through social ties (relatives, friends, and acquaintances) or by some other means. After examining the temporal pattern of the increasing significance of social ties in job search, I find no support for the institutional vacuum approach or the Soviet legacy approach. The post-Soviet period increase in a person’s chances of finding a job through personal connections can be explained by the growth of the private sector as suggested by the social capitalism perspective. At the regional level, I find that new jobs are found through personal ties more often in regions with larger small business sectors and in regions with lower economic performance index.
CHAPTER 5. INFLUENCE OF THE REGIONAL ECONOMY ON THE SECTOR AND SIZE OF WORK PLACES FOUND THROUGH NETWORKS

Privatization remains the single most influential institutional change to have affected Russia’s economy since the beginning of the market reforms. Labor market research finds that jobs in the private sector are more likely to be found through personal ties than are jobs in the public sector (Clarke and Kabalina 2000; Gerber and Mayorova 2007). In Chapter 2, I suggest that in smaller size organizations, irrespective of their ownership type, jobs would also be more likely to be found through personal ties. The findings I reported in Chapter 4 show that growth in the private sector at the national level was a major factor explaining the increase in network use in job search over time. At the same time, the size of the small business sector was found to be one of the factors explaining regional variation in network use in job search. The next question to answer, then, is how regional context affects a person’s chances of finding through social ties a new job in the private sector and in smaller size organizations. That question is explored in this chapter.

In Chapter 4, I use national and regional measures of the private sector size and small business sector as level-2 explanatory factors. In this chapter, I focus on the sector and size of newly acquired jobs as level-1 outcomes. Thus, the method through which a new job was found is no longer the dependent variable. Here I treat the method as a determinant of labor market outcomes such as the sector and the size of the new work place. In this chapter, I do not state or test hypotheses with regard to temporal changes in
the effects of job search through networks because the data lack sufficient sample size for a random time-level variance in a network slope to be estimated.

**Hypotheses**

The use of personal ties allows employers to improve the quality of the candidate pool and obtain reliable, in-depth information about potential employees at a low cost (see detailed discussion in previous chapters). Private sector employers and smaller size organizations are more motivated to take advantage of personal connections when they hire new staff than are state owned and larger size organizations. Unlike state owned organizations, privately owned firms face hard budget constraints. To minimize financial risks and costs associated with hiring procedures, private employers capitalize on the social ties of their current employees by hiring through their personal ties. Smaller size organizations, irrespective of their ownership type, face greater resource constraints than larger size organizations. As a result, they are less likely to develop formal hiring procedures for assessing applicants’ qualifications and they are less likely to have personnel departments to conduct employee search through employment agencies, advertisement, and direct applications. In this study, I expect that the use of social networks is more likely to lead to private sector jobs and to organizations of smaller size. Additionally, I expect this effect to vary depending on the conditions of the local economy and, in particular, on the economic performance of the region and its unemployment rate.
High unemployment rates increase the volume of applications and possibly lower the quality of the applicant pool, which increases the time and costs necessary to process the applications. Moreover, with the increased volume of applications, the chances that multiple applicants equally qualify for the job based on quantitative criteria go up, forcing employers to seek qualitative information on the job candidates. In order to save time and money and to obtain in-depth information on the qualifications of applicants, private employers and smaller size organizations are more motivated to disseminate information about job vacancies through the personal networks of their employees than are state owned organizations and larger size organizations in regions with higher unemployment. As a result, in the Russian regions with higher unemployment rates, the use of social networks in job search is more likely to lead to jobs in the private sector and jobs in smaller size organizations:

Hypothesis 2.1: The higher the unemployment rate in a region, the more likely a private sector job is to be found through networks, net of other effects.

Hypothesis 2.2: The higher the unemployment rate in a region, the smaller is the size of the work place in a new job found through networks, net of other effects.

Economic performance may have two possible consequences. First, private employers and smaller organizations face higher risks during an economic recession than do state owned and larger size organizations and would be more motivated to use social ties when hiring new employees. Hence, in the regions experiencing economic recession, we may observe a stronger positive relationship between network use in job search and
obtaining a private sector employment as well as a stronger negative relationship between network use and the size of the new work place:

**Hypothesis 2.3:** The higher the economic performance in a given region, the less likely a job in the private sector is to be found through networks, net of other effects

**Hypothesis 2.4:** The higher the economic performance in a given region, the larger is the size of the work place in a new job found through networks, net of other effects.

On the other hand, in the regions experiencing high economic growth, entrepreneurs may accumulate extra resources to spend on expansion of their businesses and creation of new businesses. Creation of new private businesses relies on entrepreneurial networks for resources, including human resources, so we may see a surge of network use in the private and small business sectors in the regions with better performing economies:

**Hypothesis 2.5:** The higher the economic performance in a given region, the more likely a job in the private sector is to be found through networks, net of other effects

**Hypothesis 2.6:** The higher the economic performance in a given region, the smaller is the size of the work place in a new job found through networks, net of other effects.

To test the above hypotheses, I conduct two sets of analyses with two dependent variables: private sector job and the size of the work place. In the sector analysis, I employ binomial hierarchical regression with crossed random effects because the dependent variable is a binary outcome (with one standing for a new job in the private sector).

In the work place size analysis, I employ linear hierarchical regression with crossed random effects because work place size is a continuous variable measured as a
natural log of the number of employees at a new job. The growth of the private sector in Russia was accompanied by the growth of the small business sector and a consequent reduction in the average size of work organizations (Gerber 2002). When describing the influence of the size of work organizations on network use in the regions in Chapter 1, I used the size of the region’s small business sector instead of the average work place size for a region. This measure somewhat overlaps the private sector size measure because the small business sector is a part of the private sector; unfortunately, this is the best macro-level measure of organizational size available for the Russian regions. Yet the fact remains that sector and size are distinct analytical categories, and in the Russian labor market these two factors affect labor market outcomes independently of each other (Clarke 2002; Gerber 2002). Fortunately, the SSMDR questionnaire directly asks not only the type of ownership, but also about the number of employees at the organizations in the respondent’s employment history. Hence, in the work place size analysis, I do not need to limit myself to a measure that is to one type of ownership, as the small business category is. Instead, I can use a more direct measure of work place size that varies by ownership as is the number of employees at the work place.

I will begin each set of analyses with a conditional model that includes job-level controls, regional and temporal controls, crossed random effects on the intercept, and crossed random effects on the network slope. Then, I will proceed to modeling regional and temporal fixed effects on the network slope. Models are built in a stepwise manner

---

52 Also see Chapter 2 of this dissertation.
53 A binary independent variable in the level-1 model indicating whether a new job was found through personal networks or not.
where I remove non-significant effects from one step before proceeding to the next. I do not include random effects associated with region-by-year interactions in any of the models because year-by-region cell sizes are too small for the most part to allow reliable estimates in this already complex model design.

Job-level controls include the same variables as in Chapter 4 in both sets of analyses. They include the respondent’s gender, CP membership, and education measured by three binary variables: VUZ degree, SSUZ degree, incomplete secondary education. These variables are constant for all new jobs obtained by the same respondent. Age, prior work status, and the natural log of the city size where a new job was obtained, on the other hand, vary for different new jobs obtained by the same respondent. Since both regional and temporal tendencies in the growth of the private sector affect an individual’s chances of getting a job in a private firm, I use the regional and annual size of the private sector as level-2 effects on the model’s intercept in the private sector analysis. In a similar way and for similar reasons, I use the regional and annual size of the small business sector as level-2 effects on the model’s intercept in the work place size analysis. The distribution of values for regions’ small business sector size is highly skewed. To deal with skewedness, I use a natural log transformation of it in the analysis. To test competing explanations of how regional economic conditions influence the sector and the size of the new work place found through personal networks, I use the natural log of the regional economic performance index and the natural log of the regional unemployment rates as level-2 fixed effects on the network slope.
In the previous analysis (see Chapter 4), there were a total of 6051 new jobs cross-classified within 40 regions and 17 years in the SSMDR data set. However, information on the size and type of organization is missing for some the new jobs in this dataset. When new job cases had missing data for the dependent variables, I excluded them from the analyses. As a result, 5956 new jobs are included in the private sector analysis and 5404 new jobs are included in the work place size analysis. The number of regions and years remains the same in both sets of analyses: 40 and 17 respectively. Means and standard deviations for all variables included in the analyses appear in Table 5.1. 36% of all new jobs in the sample are found in the private sector. The average natural log of work place size in the sample is 4.46 with a standard deviation of 1.75. 47% of new jobs are found through personal ties in both samples. All level-2 variables have the same mean values and standard deviations as in the previous analysis described in Chapter 4. Some level-1 independent variables, however, have mean values that are slightly higher or lower than in the previous analysis (see Table 4.1) due to the exclusion of cases missing information on the type and size of firm.

Private Sector Analysis

I begin my analysis with a conditional model in which I explain non-random variation in the intercept with job-level, regional, and temporal covariates and allow the intercept and the network slope to vary randomly across both regions and time. Other slopes are fixed. Level-1 model can be written as:

$$\eta_{ijk} = \pi_{0jk} + \pi_{1jk}(\text{Job Found via Networks})_{ijk} + \pi_{2jk}(\text{Woman})_{ijk}$$
\[ \eta_{ijk} = \log \left[ \frac{p_{ijk} \text{Private Sector}}{1 - p_{ijk} \text{Private Sector}} \right] \]

where \( \eta_{ijk} \) is the log-odds of getting a new job in the private sector; \( \pi_{0jk} \) is the intercept, or the mean log-odds of getting a new job in the private sector in region \( j \) in year \( k \); \( \pi_{pjk} \) are fixed job-level effects; \( \bar{X}_{\ldots} \) is a grand mean for a job characteristic. Level-1 variance for a binary dependent variable is heteroscedastic and equals \( \phi_{ijk}(1 - \phi_{ijk}) \), where \( \phi_{ijk} \) is the probability of getting a job in the private sector (Raudenbush and Bryk 2002). The level-2 model for the intercept is

\[ \pi_{0jk} = \theta_0 + \beta_{01} (\text{Annual Private Sector Size})_k + \gamma_{01} (\text{Regional Private Sector Size})_j + b_{00j} + c_{00k}, \]

where \( \theta_0 \) is the model intercept, that is, the expected log-odds of getting a new job in the private sector when all other variables and random effects are set to zero; \( \beta_{01} \) is the fixed effect of the annual private sector size (assumed constant over all regions); \( \gamma_{01} \) is the fixed effect of the regional private sector size (assumed constant over all years); \( b_{00j} \), the regional random variance, is the contribution of region \( j \) averaged over all years; and \( c_{00k} \), the temporal random variance, is the contribution of year \( k \) averaged over all regions. The level-2 model for the network slope (variable “job found via networks”) is

\[ \pi_{1jk} = \theta_1 + b_{10j} + c_{10k}, \]

where \( \theta_1 \) is the expected network effect, holding random effects at zero; \( b_{10j} \) is the regional random variance in the network effect; and \( c_{10k} \) is the temporal random variance.
Table 5.1. Descriptive Statistics for Sector and Work Place Size Analyses.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Private Sector Analysis</th>
<th>Work Place Size Analysis</th>
<th>Regional Level Variables (N=40):(^a)</th>
<th>Time Level Variables (N=17):(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N=5956)</td>
<td>(N=5404)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Job Level Variables:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job is in Private Sector</td>
<td>0.36 0.48</td>
<td>- -</td>
<td>Regional Private Sector Size</td>
<td>0.00 4.18</td>
</tr>
<tr>
<td>Job is in Private Sector</td>
<td></td>
<td></td>
<td>Logged Regional Small Business Sector</td>
<td>1.01 0.54</td>
</tr>
<tr>
<td>Logged Work Place Size</td>
<td>- -</td>
<td>4.46 1.75</td>
<td>Logged Regional Economic Performance</td>
<td>0.66 0.38</td>
</tr>
<tr>
<td>Job Found via Networks</td>
<td>0.47 0.50</td>
<td>0.47 0.50</td>
<td>Index</td>
<td>1.26 0.41</td>
</tr>
<tr>
<td>Woman</td>
<td>0.54 0.50</td>
<td>0.55 0.50</td>
<td>Logged Regional Unemployment)</td>
<td></td>
</tr>
<tr>
<td>CP Member in 1991</td>
<td>0.08 0.27</td>
<td>0.08 0.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CP Membership Missing</td>
<td>0.00 0.27</td>
<td>0.00 0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VUZ Degree</td>
<td>0.24 0.43</td>
<td>0.25 0.43</td>
<td>Annual Private Sector Size</td>
<td>22.06 19.16</td>
</tr>
<tr>
<td>SSUZ Degree</td>
<td>0.26 0.44</td>
<td>0.27 0.44</td>
<td>Annual Small Business Sector Size</td>
<td>5.68 4.31</td>
</tr>
<tr>
<td>Incomplete Secondary Education</td>
<td>0.06 0.24</td>
<td>0.06 0.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Centered at 18</td>
<td>12.69 10.23</td>
<td>12.63 10.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logged City Size</td>
<td>12.68 2.58</td>
<td>12.66 2.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City Size Missing</td>
<td>0.10 0.30</td>
<td>0.09 0.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous Status is Employed</td>
<td>0.36 0.48</td>
<td>0.37 0.48</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) Regional data centered on all-Russian annual means.

\(^b\) All-Russian annual means from regional data.
in the network effect. Random effects $b_{00j}$, $b_{10j}$, $c_{00k}$, and $c_{10k}$ are assumed normally distributed with mean equal zero and variances $\tau_{b00}$, $\tau_{b10}$, $\tau_{c00}$, and $\tau_{c10}$ respectively. The regional level random effects for intercept and network slope co-vary, and so do the time level random effects for the intercept and the network slope. Excepting the network slope, other level-1 variables are not allowed to vary across regions and time in the interest of parsimony. That is, the effects $\pi_{2jk}$ through $\pi_{11jk}$ are constant across regions and years:

$$\pi_{pjk} = \theta_p$$ for $p>1$. \[5.4\]

Results for this model specification appear in Model 1, Table 5.2. As expected, the use of personal ties in job search is associated with a higher log odds of 0.499 that the new job is in the private sector, which corresponds to a relative odds of $\exp(0.499)=1.647$, holding other predictors constant and random effects at zero.\(^{54}\) When looking at the job-level controls, women are less likely to get new jobs in the private sector than are men: being a woman is associated with a lower log-odds of getting a job in the private sector, or with an odds ratio of $\exp(-0.500)=0.607$, holding constant other variables and all random effects. CP membership effect is negative, but it is not statistically significant. College educated workers are less likely to get private sector jobs than are workers with secondary education diplomas (secondary education is the base category for education measures): VUZ degree is associated with lower log-odds of getting a job in the private sector, or with an odds ratio of $\exp(-0.271)=0.762$, holding constant other variables and random effects. The effects of a worker’s having an SSUZ

\(^{54}\) The results reported here are unit-specific.
degree or having less than secondary education are also negative, but they are not statistically significant. Younger workers are more likely to get into the private sector than older workers. Each one year increase in age reduces the log-odds of getting a job in the private sector by 0.007, holding constant other variables and random effects. Associated with this is a relative odds of \( \exp(-0.007) = 0.993 \). Both city size and employment prior to finding a new job have positive effects on getting a new job in the private sector. Each unit increase in the natural log of city size is associated with a relative odds of getting a private sector job of \( \exp(0.106) = 1.112 \), holding constant the other variables and random effects. Employment immediately prior to getting a new job is associated with a relative odds of getting a private sector job of \( \exp(0.126) = 1.134 \), holding constant the other variables and random effects. As expected, the temporal measure of the private sector size positively affects the chances of getting a job in the private sector. Each one percent increase in the annual national rate of private sector employment is associated with a higher log-odds of getting a job in the private sector of 0.121 which corresponds to an odds ratio of \( \exp(0.121) = 1.129 \). Increases in the regional rate of private sector employment are associated with a higher log-odds of getting a job in the private sector, but the coefficient is not statistically significant—which is unexpected.

The conditional time variance in the log-odds of getting a new job in the private sector is almost twice as large as the conditional regional level variance (the values are 0.401 and 0.209 respectively). Random variance in the network effect between regions is estimated at 0.071. The network effect on getting a private sector job appears to be constant over years: the temporal variance in the network effect is estimated at 0.010, but
Table 5.2. Cross-Classified Random Effect Models for Getting a Job in Private Sector.

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient</th>
<th>SE</th>
<th>Coefficient</th>
<th>SE</th>
<th>Coefficient</th>
<th>SE</th>
<th>Coefficient</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-4.369***</td>
<td>0.341</td>
<td>-4.348***</td>
<td>0.339</td>
<td>-4.341***</td>
<td>0.339</td>
<td>-4.346***</td>
<td>0.340</td>
</tr>
<tr>
<td>Job Found via Networks</td>
<td>0.499***</td>
<td>0.092</td>
<td>0.499***</td>
<td>0.086</td>
<td>0.455***</td>
<td>0.080</td>
<td>0.466***</td>
<td>0.080</td>
</tr>
<tr>
<td>Job Level Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman</td>
<td>-0.500***</td>
<td>0.069</td>
<td>-0.521***</td>
<td>0.068</td>
<td>-0.517***</td>
<td>0.068</td>
<td>-0.521***</td>
<td>0.068</td>
</tr>
<tr>
<td>CP Member in 1991</td>
<td>0.104</td>
<td>0.135</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CP Membership Missing</td>
<td>1.487</td>
<td>1.099</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>VUZ Degree</td>
<td>-0.271**</td>
<td>0.090</td>
<td>-0.203*</td>
<td>0.082</td>
<td>-0.204*</td>
<td>0.082</td>
<td>-0.206*</td>
<td>0.082</td>
</tr>
<tr>
<td>SSUZ Degree</td>
<td>-0.144</td>
<td>0.085</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Incomplete Secondary Education</td>
<td>-0.106</td>
<td>0.159</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Age Centered at 18</td>
<td>-0.007*</td>
<td>0.004</td>
<td>-0.007*</td>
<td>0.003</td>
<td>-0.007*</td>
<td>0.003</td>
<td>-0.007*</td>
<td>0.003</td>
</tr>
<tr>
<td>Logged City Size</td>
<td>0.106***</td>
<td>0.021</td>
<td>0.105***</td>
<td>0.021</td>
<td>0.097***</td>
<td>0.021</td>
<td>0.098***</td>
<td>0.021</td>
</tr>
<tr>
<td>City Size Missing</td>
<td>-0.264*</td>
<td>0.126</td>
<td>-0.259*</td>
<td>0.126</td>
<td>-0.242</td>
<td>0.126</td>
<td>-0.241*</td>
<td>0.126</td>
</tr>
<tr>
<td>Prior Status is Employed</td>
<td>0.126*</td>
<td>0.074</td>
<td>0.127*</td>
<td>0.073</td>
<td>0.123*</td>
<td>0.073</td>
<td>0.125*</td>
<td>0.073</td>
</tr>
<tr>
<td>Level-2 Fixed Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Private Sector Size</td>
<td>0.121***</td>
<td>0.010</td>
<td>0.119***</td>
<td>0.010</td>
<td>0.119***</td>
<td>0.010</td>
<td>0.119***</td>
<td>0.010</td>
</tr>
<tr>
<td>Regional Private Sector Size</td>
<td>0.016</td>
<td>0.018</td>
<td>0.017</td>
<td>0.018</td>
<td>0.024</td>
<td>0.017</td>
<td>0.031*</td>
<td>0.018</td>
</tr>
<tr>
<td>Network Slope:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logged Regional Econ. Performance</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.531*</td>
<td>0.218</td>
<td>1.279**</td>
<td>0.434</td>
</tr>
<tr>
<td>Logged Regional Unemployment</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.109</td>
<td>0.146</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Logged Regional Economic Performance Squared</td>
<td>-0.494*</td>
<td>0.232</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued ...
Table 5.2 – Continued.

<table>
<thead>
<tr>
<th></th>
<th>Model 1 Coefficient</th>
<th>SE</th>
<th>Model 2 Coefficient</th>
<th>SE</th>
<th>Model 3 Coefficient</th>
<th>SE</th>
<th>Model 4 Coefficient</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Random Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>** Intercept:**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Variance</td>
<td>0.401***</td>
<td></td>
<td>0.446***</td>
<td></td>
<td>0.446***</td>
<td></td>
<td>0.448***</td>
<td></td>
</tr>
<tr>
<td>Regional Variance</td>
<td>0.209***</td>
<td></td>
<td>0.202***</td>
<td></td>
<td>0.200***</td>
<td></td>
<td>0.210***</td>
<td></td>
</tr>
<tr>
<td>** Network Slope:**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Variance</td>
<td>0.071***</td>
<td></td>
<td>0.068***</td>
<td></td>
<td>0.023***</td>
<td></td>
<td>0.025***</td>
<td></td>
</tr>
<tr>
<td>Regional Variance</td>
<td>0.010</td>
<td></td>
<td>-</td>
<td></td>
<td>-</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Number of Observations</td>
<td>5956</td>
<td></td>
<td>5956</td>
<td></td>
<td>5956</td>
<td></td>
<td>5956</td>
<td></td>
</tr>
<tr>
<td>Percent of Regional Variance in the Network Slope Reduced</td>
<td>-</td>
<td></td>
<td>-</td>
<td></td>
<td>66.2</td>
<td></td>
<td>63.2</td>
<td></td>
</tr>
<tr>
<td>BIC</td>
<td>16662.6</td>
<td></td>
<td>16519.9</td>
<td></td>
<td>16544.3</td>
<td></td>
<td>16586.0</td>
<td></td>
</tr>
</tbody>
</table>

*a* Centered around grand mean  
*b* One-tailed test.
it is not statistically significant. Lack of variation in the network slope across time is expected and is likely due to a small number of the time-units in this data set: in years 1985 through 1987, the chances of getting a private sector job were zero. Thus, we can observe differences only across 14 years.

In the next step, I simplify Model 1 by removing non-significant effects and proceeding to explain regional variation in the network effect. Model 2 in Table 5.2 is similar to Model 1, but it does not include the level-1 controls that did not appear statistically significant in Model 1. For the same reason, I constrain the temporal random variance in the network slope in Model 2 to zero. Model 2 is more parsimonious and has a better fit than Model 1. All subsequent models will be compared to Model 2; it serves as the base model for further analysis.

To test hypotheses 2.1, 2.3, and 2.5, I add two fixed regional level effects on the network slope in Model 3: natural log of regional economic performance index and natural log of regional unemployment rate. Both variables are centered at their grand mean because zero values are meaningless for them; all observed values for the two logged regional variables are above zero. Level-1 model now can be written as

\[
\eta_{ijk} = \pi_{0jk} + \pi_{1jk}(\text{Job Found via Networks})_{ijk} + \pi_{2jk}(\text{Woman})_{ijk} + \pi_{3jk}(\text{VUZ Education})_{ijk} + \pi_{4jk}(\text{Age})_{ijk} + \pi_{5jk}(\text{Logged City Size})_{ijk} - \bar{X} - + \pi_{6jk}(\text{City Size Missing})_{ijk} + \pi_{7jk}(\text{Previously Employed})_{ijk},
\]

[5.5]

The level-2 models are

\[
\pi_{0jk} = \theta_{0j} + \beta_{01}(\text{Annual Private Sector Size})_k + \gamma_{01}(\text{Regional Private Sector Size})_j + b_{00j} + c_{00k},
\]

[5.6]

\[
\pi_{1jk} = \theta_{1j} + \gamma_{11}(\text{Logged Regional Economic Performance Index})_j - \bar{W}_j
\]
\[ + \gamma_{12}((\text{Logged Regional Unemployment})_j - \bar{W}_.) + b_{10j}, \quad [5.7] \]

\[ \pi_{pjk} = \theta_p, \ p > 1, \quad [5.8] \]

where \( \gamma_{1j} \) is a regional fixed effect on the network slope; \( \bar{W}_j \) is a regional variable’s grand mean.

The random variance in the network slope between regions is reduced by the two regional explanatory variables from 0.068 to 0.023, or by about 66%. The natural log of the regional economic performance index has a positive effect on the positive network slope. Getting a job through networks is associated with higher log-odds of getting a job in the private sector by a factor of 0.455, holding random effects and all predictors, including regional economic performance, at zero. However, a one unit increase in the regional economic performance index increases this effect by 0.531. Regional unemployment effect on the network slope is positive as expected (0.109), but it is not statistically significant. That is, the results in Model 3 are consistent with hypothesis 2.5, but not with hypotheses 2.1 and 2.3. The higher the regional economic performance, the higher the chances of getting a private sector job through personal ties. However, the regional unemployment rate does not change the effect of personal network use on getting a private sector job.

In the next step, to plot the predicted probabilities of getting a private sector job via networks depending on the levels of economic performance in the region, I exclude the regional unemployment rate from the network slope equation as a non-significant effect. Residual diagnostics for this model reveal that the regional economic performance may have a curvilinear effect on the network slope. To explore this possibility, I go
further and model a non-linear regional economic performance effect by adding its
squared term into the network slope equation. Model 4 has a slightly worse fit than either
Model 2 or Model 3, but adding a squared term for logged regional economic
performance index reduces the conditional random variance between regions in the
network slope from 0.068 in Model 2 to 0.025 in Model 4, or by about 63%, which is
only slightly less than 66% in Model 3. Both the main effect and the square term for
logged regional economic performance are statistically significant. The positive initial
effect of the regional economic performance on the network slope changes its sign at
value =-(1.279)/(2*(-0.494))=1.295, which is about 3.41 standard deviations above the
average natural log of the regional economic performance index. This value is not
observed in the data. Moscow has the highest regional economic performance index at
1.61 which is about 2.5 standard deviations above the mean. This means that while the
regional economic performance has a positive effect on the chances of getting a job in the
private sector through personal networks as predicted by hypothesis 2.5, this effect
diminishes at higher values of the region’s logged economic performance index.

Figure 5.1 portrays the interaction between the logged regional economic
performance and the effect of network use in job search on the sector of the new job by
showing the predicted probabilities that a job found through personal networks will be in
the private sector by the region’s economic performance based on the preferred Model 4.
Job level characteristics and regional private sector size are held constant at their mean

---

55 In the model with the logged regional economic performance index included as a fixed effect on the
network slope without its square term included, the regional random variance in this slope is reduced only
by 52%.
values in this graph. Annual private sector size is held constant at the mean for the post-Soviet period. Random variances are held at zero. Overall, the chances that a new job found through personal networks is in the private sector are higher in the regions with higher performing economies, but the positive returns to network use on finding private sector jobs increase at a diminishing rate. For example, the absolute difference in the likelihood of finding a private sector job through networks in the regions with a logged economic performance index two standard deviations below the mean and at the mean value is 28.5%. At the same time, the absolute difference in the likelihood of finding a private sector job through networks in the regions with a logged economic performance

![Graph showing expected probability of finding a job in the private sector by logged regional economic performance index in standard deviations.](image)

Figure 5.1. Expected Probability That a New Job Found through Personal Networks Is in the Private Sector by Logged Regional Economic Performance Index in Standard Deviations.
Diagnostics performed for Model 4 show that job level residuals do not correlate with either regional or time-level residuals. There is no evidence of clustering among the job level residuals: when scalar variance is estimated, it equals 0.910 which is close to 1.0. Regional and time-level residuals do not correlate with each other, nor do they correlate with any of the fixed effects.

Work Place Size Analysis

The conditional model in which I explain non-random variation in the intercept with job-level, regional, and temporal covariates and allow the intercept and the network slope to vary randomly across both regions and time, keeping the other slopes fixed can be written as:

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk}(\text{Job Found via Networks})_{ijk} + \pi_{2jk}(\text{Woman})_{ijk} + \pi_{3jk}(\text{CP Member}) + \pi_{4jk}(\text{CP Member Missing}) + \pi_{5jk}(\text{VUZ Education})_{ijk} + \pi_{6jk}(\text{SSUZ Education})_{ijk} + \pi_{7jk}(\text{Incomplete Secondary Education})_{ijk} + \pi_{8jk}(\text{Age})_{ijk} + \pi_{9jk}(\text{Logged City Size})_{ijk} - \bar{X}_{\cdot} + \pi_{10jk}(\text{City Size Missing})_{ijk} + \pi_{11jk}(\text{Prior Employment Status})_{ijk} + e_{ijk},$$

where $Y_{ijk}$ is the natural log of the number of employees at the new job; $\pi_{0jk}$, the intercept, is the mean natural log of the number of employees at the new job in region $j$ in year $k$; $\pi_{pjk}$ is a fixed job-level effect; $\bar{X}_{\cdot}$ is a grand mean for a job characteristic; $e_{ijk}$ is the random job effect, that is, the deviation of new job $i$'s work place size from the mean work place size in region $j$ and year $k$. The level-2 model for the intercept is
\[ \pi_{0jk} = \theta_0 + \beta_{01} (\text{Annual Small Business Sector Size})_k + \gamma_{01} ((\text{Logged Regional Small Business Sector Size})_j - \bar{W}_w) + b_{00j} + c_{00k}, \]

where \( \theta_0 \), the model intercept, is the expected natural log of the number of employees at the new work place when all other variables and random effects are set to zero; \( \beta_{01} \) is the fixed effect of the annual small business sector size (assumed constant over all regions); \( \gamma_{01} \) is the fixed effect of the regional small business sector size (assumed constant over all years); \( \bar{W}_w \) is a regional variable’s grand mean; \( b_{00j} \), the regional random variance, is the contribution of region \( j \) averaged over all years; \( c_{00k} \), the temporal random variance, is the contribution of year \( k \) averaged over all regions. The level-2 model for the network slope (variable “job found via networks”) is

\[ \pi_{1jk} = \theta_1 + b_{10j} + c_{10k}, \]

where \( \theta_1 \) is the expected network effect, holding random effects at zero; \( b_{10j} \) is the regional random variance in the network effect; \( c_{10k} \) is the temporal random variance in the network effect. Random effects \( b_{00j} \), \( b_{10j} \), \( c_{00k} \), and \( c_{10k} \) are assumed normally distributed with mean equal zero and variances \( \tau_{b00}, \tau_{b10}, \tau_{c00}, \) and \( \tau_{c10} \), respectively. The regional level random effects for intercept and network slope co-vary, as do the time level random effects for intercept and network slope. Other than the network slope, level-1 variables are not allowed to vary across regions and time in the interest of parsimony.

That is, the effects \( \pi_{2jk} \) through \( \pi_{11jk} \) are constant across regions and years:

\[ \pi_{pjk} = \theta_p \text{ for } p>1. \]
Note that I center two variables (logged city size and logged small business sector size) at their grand means. In their case, zero is not meaningful since all of their values are above zero.

The results for this specification appear in Model 1 in Table 5.3. As expected, the use of personal ties in job search has a negative effect on the size of the workplace. The logged work place size for jobs found through personal networks is smaller by 0.355 units than it is for jobs found through other methods of search, holding constant the other predictors and random effects. When looking at the job-level controls, I find that women tend to work in smaller size organizations than do men: the log of work place size for women is lower on average by 0.561 than it is for men. CP membership effect has a negative, but non-significant effect on work place size. Coefficients for VUZ and SSUZ degrees are also not statistically significant. Workers without secondary education tend to work in smaller size organizations: the coefficient for this variable is -0.290, and it is statistically significant. Age and prior employment status do not have a statistically significant effect on the work place size. City size and work place size are positively associated: each unit increase in the natural log of city size is associated with 0.074 units increase in the natural log of work place size, holding constant the other predictors and random effects. Both regional and temporal measures of the small business sector size affect work place size negatively, as expected, but only the annual measure is statistically significant. A one percent increase in the annual national rate of small business sector size is associated with a decrease in the natural log of work place size by 0.039.
The conditional random time variance in the log-odds of getting a new job in the private sector is much smaller than the conditional random regional level variance (the values are 0.138 and 0.009 respectively). Random variance in the network effect between regions is estimated at 0.033; however, it is not statistically significant at the 0.05-level. The network effect on work place size appears to be constant over the years, as well: the temporal variance in the network effect is estimated at 0.004, but it is not statistically significant at the 0.05-level. That is, holding constant the other predictors, the use of personal ties in job search has a negative effect on the size of the work place and this effect is constant across regions and years. I have to conclude that my results are not consistent with hypotheses 2.2, 2.4, and 2.6.

**Summary**

In this chapter, I have explored how regional context affects one’s chances of finding a job through social ties in the private sector and in smaller size firms. My analysis shows that social networks do, indeed, lead to employment in the private sector. This relationship is positively affected by the regional economic performance, but not by the region’s unemployment rate. Social ties also lead to jobs in organizations of smaller size more often than do other methods of search. This relationship does not vary by region; that is, it is not affected either by regional economic performance or by unemployment.
Table 5.3. Cross-Classified Random Effect Models for the Natural Log of Work Place Size.

<table>
<thead>
<tr>
<th>Main Effects</th>
<th>Coefficient</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>5.232***</td>
<td>0.101</td>
</tr>
<tr>
<td>Job Found via Networks</td>
<td>-0.355***</td>
<td>0.061</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job Level Controls</th>
<th>Coefficient</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman</td>
<td>-0.561***</td>
<td>0.047</td>
</tr>
<tr>
<td>CP Member in 1991</td>
<td>-0.007</td>
<td>0.089</td>
</tr>
<tr>
<td>CP Membership Missing</td>
<td>0.276</td>
<td>0.598</td>
</tr>
<tr>
<td>VUZ Degree</td>
<td>0.043</td>
<td>0.062</td>
</tr>
<tr>
<td>SSUZ Degree</td>
<td>-0.045</td>
<td>0.058</td>
</tr>
<tr>
<td>Incomplete Secondary Education</td>
<td>-0.290**</td>
<td>0.106</td>
</tr>
<tr>
<td>Age Centered at 18</td>
<td>0.004</td>
<td>0.003</td>
</tr>
<tr>
<td>Logged City Size&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.074***</td>
<td>0.014</td>
</tr>
<tr>
<td>City Size Missing</td>
<td>-0.224&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.089</td>
</tr>
<tr>
<td>Prior Status is Employed</td>
<td>0.031</td>
<td>0.050</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level-2 Fixed Effects</th>
<th>Coefficient</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Small Business Sector Size</td>
<td>-0.039***</td>
<td>0.009</td>
</tr>
<tr>
<td>Logged Regional Small Business Sector Size&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.191&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.089</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Random Effects</th>
<th>Coefficient</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept:</td>
<td>2.827</td>
<td></td>
</tr>
<tr>
<td>Time Variance</td>
<td>0.009&lt;sup&gt;*&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Regional Variance</td>
<td>0.138***</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Networks Slope:</th>
<th>Coefficient</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Variance</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>Regional Variance</td>
<td>0.033</td>
<td></td>
</tr>
</tbody>
</table>

| Number of Observations     | 5404        |     |

<sup>a</sup> Centered around grand mean
CHAPTER 6. REGIONAL ECONOMY AND WAGE RETURNS TO FINDING A JOB THROUGH NETWORKS

In Chapter 2, I argued that the relationship between finding a job through personal ties and job quality depends on the macro-level context. As I mentioned in that chapter, research on social networks in the Russian labor market has found a positive link between the use of social networks in job search and job quality (Clarke 1999; Gerber and Mayorova 2007). Those studies, however, do not provide information on whether such a link exists for smaller size employers. They also ignore the contextual aspect that may affect the relationship between network use and job quality. In this chapter, I explore the effect of the regional economy on the link between personal network use in job search and stratification outcomes such as wages.

Hypotheses

Economic recession tends to be accompanied by higher levels of unemployment. When jobs are scarce and the labor force is oversupplied, neoclassical economists predict that employers will lower workers’ wages, thus bringing supply and demand into balance. What has been found by sociologists, however is that instead of lowering wages, employers who already pay high wages increase demands on workers’ qualifications (Clarke 2000). Aside from job skills and appropriate work experience, such demands may include certain personal qualities, manners, and guarantees that an applicant intends to and will stay at the job for a long time. All of this is the kind of intensive information that
may come only through personal connections, through referral networks. Under conditions of economic crisis and high unemployment, employers would also be more inclined to use personal ties to obtain additional information on job candidates for positions with higher starting salaries, as the employers stand to lose more money on mismatches between workers and vacancies in these cases. Given the differences in budget constraints between private and public employers and between smaller organizations and larger organizations, I expect that private employers and smaller size organizations will be more inclined to seek candidates for better paying jobs through networks than will employers from the public sector and larger organizations, respectively. Keeping this in mind, I expect that both poor economic performance and high unemployment rates will positively affect the relationship between the use of network ties in job search and paid wages in the private sector and in the smaller size organizations:

**Hypothesis 3.1:** The higher the unemployment rate in a region, the higher the wages paid for a new job found through networks in the private sector, net of other effects.

**Hypothesis 3.2:** The higher the unemployment rate in a region, the higher the wages paid for a new job found through networks in a smaller size organization, net of other effects.

**Hypothesis 3.3:** The lower the economic performance in a region, the higher the wages paid for a new job found through networks in the private sector, net of other effects.

**Hypothesis 3.4:** The lower the economic performance in a region, the higher the wages paid for a new job found through networks in a smaller size organization, net of other effects.
Economic performance may have the opposite effect on the relationship between network use and wages in the private sector and smaller size organizations. Economic growth fosters entrepreneurship and the creation of new jobs. Under these conditions, employers may find themselves competing for workers, being more open to negotiations, and having to offer higher wages and better working conditions than their competitors.

**Hypothesis 3.5:** The higher the economic performance in a region, the higher the wages paid for a new job found through networks in the private sector, net of other effects.

**Hypothesis 3.6:** The higher the economic performance in a region, the higher the wages paid for a new job found through networks in a smaller size organization, net of other effects.

**Results**

To test the above hypotheses, I employ a two level hierarchical linear regression. I do not model crossed random effects for regions and time in this chapter because the data on respondents’ current wages are not longitudinal since each individual holds only one current job. It is useful to note, however, that even though the data are not longitudinal, the current jobs were found in different years. Unlike in the analyses in the previous two chapters, the level-1 units here are individuals because each individual reports wages for only one current job. The level-2 units are regions. The dependent variable in this analysis is the natural log of wages reported for the job held by the respondent at the time of the survey (logged wages). The focus of this analysis is on the method of search that led to the current job, the sector, and the size of the current work place, as well as two interaction terms: (1) interaction between the method of search and the sector and (2)
interaction between the method of search and the size of the current work place. All
models are built in a stepwise manner in which I remove the non-significant effects
before proceeding to the next.

Just as in the previous analyses, level-1 controls include the respondents’ gender, CP
membership, age, prior work status, size of the city, and education, all of which have
been shown to affect wages in previous research. In addition to these variables, I also
control for the number of years at the current job and the survey’s wave (the last wave of
SSMDR, wave three, was conducted in January 2002 and serves as the base category).
The latter variable is used to account for wage increases due to inflation. Information on
CP membership, city size, sector, and work place size is missing in some cases. The
missing data are replaced as explained in Chapter 3, and each model includes binary
variables indicating whether the data was missing or not on each of these four variables.
At level-2, I control for regional economic performance because in regions with growing
economies the wages may be higher. To test competing explanations of how a region’s
economic performance influences the wages paid for jobs found through personal
networks depending on the size and sector of the new work place, I use the natural log of
the regional economic performance index and the natural log of the regional
unemployment rate as level-2 fixed effects on the interaction terms.

Table 6.1 presents descriptive statistics. There are 2115 current jobs for 2115 respondents
within 40 regions included in the analysis. 7.74 is the mean of logged wages. 50% of the
jobs are found through personal networks. 47% of current jobs are in the private sector.
The mean logged work place size is 4.68. The information on the new job’s sector is
missing in less than 1% of cases; the information on the work place size is missing in 11% of cases. The average job tenure is 4.37 years. Each wave contributes about one third of the cases. The mean logged regional economic performance index equals 0.66 with a standard deviation of 0.38. The mean logged regional unemployment rate is 1.26% with a standard deviation of 0.41.

Table 6.1. Descriptive Statistics for Sector and Work Place Size Analyses.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Job Level Variables (N=2115):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logged Wages</td>
<td>7.74</td>
<td>0.79</td>
</tr>
<tr>
<td>Job Found via Networks</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Job is in the Private Sector</td>
<td>0.47</td>
<td>0.50</td>
</tr>
<tr>
<td>Sector Missing</td>
<td>0.00</td>
<td>0.05</td>
</tr>
<tr>
<td>Logged Work Place Size</td>
<td>4.68</td>
<td>1.61</td>
</tr>
<tr>
<td>Work Place Size Missing</td>
<td>0.11</td>
<td>0.32</td>
</tr>
<tr>
<td>Woman</td>
<td>0.55</td>
<td>0.50</td>
</tr>
<tr>
<td>CP Member in 1991</td>
<td>0.09</td>
<td>0.28</td>
</tr>
<tr>
<td>CP Membership Missing</td>
<td>0.00</td>
<td>0.04</td>
</tr>
<tr>
<td>VUZ Degree</td>
<td>0.27</td>
<td>0.44</td>
</tr>
<tr>
<td>SSUZ Degree</td>
<td>0.28</td>
<td>0.45</td>
</tr>
<tr>
<td>Incomplete Secondary Education</td>
<td>0.04</td>
<td>0.20</td>
</tr>
<tr>
<td>Age Centered at 18</td>
<td>14.82</td>
<td>10.02</td>
</tr>
<tr>
<td>Logged City Size</td>
<td>12.55</td>
<td>2.56</td>
</tr>
<tr>
<td>City Size Missing</td>
<td>0.10</td>
<td>0.30</td>
</tr>
<tr>
<td>Previous Status is Employed</td>
<td>0.42</td>
<td>0.49</td>
</tr>
<tr>
<td>Job Tenure</td>
<td>4.37</td>
<td>4.34</td>
</tr>
<tr>
<td>Survey Wave 1</td>
<td>0.32</td>
<td>0.47</td>
</tr>
<tr>
<td>Survey Wave 2</td>
<td>0.33</td>
<td>0.47</td>
</tr>
</tbody>
</table>

| Regional Level Variables (N=40):*            |      |     |
| Logged Regional Economic Performance Index   | 0.66 | 0.38|
| Logged Regional Unemployment                 | 1.26 | 0.41|

*Regional data centered on all-Russian annual means.
I begin the analysis with a conditional model that includes a variable indicating whether a job was found through personal networks or not, the sector and the size of the current work place, level-1 and level-2 controls, and a random effect on the intercept. None of the slopes are allowed to vary across regions in this model. Level-1 model can be written as:

\[
Y_{ijk} = \beta_{0j} + \beta_1 (\text{Job Found via Networks})_{ij} + \beta_2 (\text{Job is in the Private Sector})_{ij} + \beta_3 (\text{Sector Missing})_{ij} + \beta_4 ((\text{Logged Work Place Size})_{ij} - \bar{X}_.) + \beta_5 (\text{Work Place Size Missing})_{ij} + \beta_6 (\text{Woman})_{ij} + \beta_7 (\text{CP Member})_{ij} + \beta_8 (\text{CP Member Missing}) + \beta_9 (\text{VUZ Education})_{ij} + \beta_{10} (\text{SSUZ Education})_{ij} + \beta_{11} (\text{Incomplete Secondary Education})_{ij} + \beta_{12} (\text{Age18})_{ij} + \beta_{13} ((\text{Logged City Size})_{ij} - \bar{X}_.) + \beta_{14} (\text{City Size Missing})_{ij} + \beta_{15} (\text{Prior Employment Status})_{ij} + \beta_{16} (\text{Job Tenure})_{ij} + \beta_{17} (\text{Survey Wave 1})_{ij} + \beta_{18} (\text{Survey Wave 2})_{ij} + r_{ij},
\]  

[6.1]

where \(Y_{ij}\) is the natural log of wages respondent receives at his or her current job; \(\beta_{0j}\) is the intercept; \(\beta_{pj}\) is a fixed job-level effect; \(\bar{X}_.\) is a job-level variable’s grand mean; and \(r_{ij}\) is the random job-level effect.

None of the level-1 variables are allowed to vary across regions in this model. Hence the level-2 models can be written as:

\[
\beta_{0j} = \gamma_{00} + \gamma_{01} ((\text{Logged Regional Economic Performance Index})_{j} - \bar{W}_.) + u_{0j},
\]

[6.2]

\[
\beta_{pj} = \gamma_{p0} \text{ for } p>0.
\]

[6.3]

where \(\gamma_{00}\) is the intercept; \(\gamma_{01}\) is the fixed effect of the logged regional economic performance; \(\bar{W}_\) is the regional variable’s grand mean; and \(u_{0j}\) is the regional random variance.
Results for this model specification appear in Model 1, Table 6.2. They are consistent with hypotheses 6.1 and 6.2. As expected, wages in the private sector are higher than in the public sector: the logged wages paid in the private sector are higher by 0.321 units than the logged wages in the public sector, net of other effects. The wages are also higher in larger organizations: a one unit increase in the logged work place size increases the logged wages by 0.045 units, net of other effects. That is, smaller size organizations pay lower wages. When looking at the job-level controls, women’s logged wages are lower than men’s, holding other effects constant. CP membership’s effect is positive, but it is not statistically significant. VUZ and SSUZ degrees affect wages positively, while having incomplete secondary education affects wages negatively, controlling for other effects. Age has a negative effect on wages while city size, being employed immediately prior to getting the current job, and job tenure affect wages positively, holding other effects constant. Wages reported in wave one and wave two are slightly lower than the wages reported in wave three of the survey, net of other effects. The regional economic performance has a positive effect on the respondents’ wages: for each one unit increase in the logged regional economic performance index, the logged wages increase by 0.377 units. Some regional and job-level variation in the logged wages still remains unexplained with variation between jobs greater than variation between regions (random variance components are 0.026 and 0.389 respectively).

In the next model, I add two interaction terms. The first interaction is between network usage and private sector, and the second interaction is between network usage and logged work place size centered at the grand mean. I exclude CP membership from
this model because it does not have a statistically significant effect on logged wages. The level-1 model can be written as:

\[ Y_{ijk} = \beta_{0j} + \beta_{1j}(\text{Job Found via Networks})_{ij} + \beta_{2j}(\text{Private Sector})_{ij} + \beta_{3j}(\text{Sector Missing})_{ij} + \beta_{4j}(\text{Logged Work Place Size})_{ij} + \beta_{5j}(\text{Work Place Size Missing})_{ij} + \beta_{6j}(\text{VUZ Education})_{ij} + \beta_{7j}(\text{SSUZ Education})_{ij} + \beta_{8j}(\text{Incomplete Secondary Education})_{ij} + \beta_{9j}(\text{Age18})_{ij} + \beta_{10j}(\text{Logged City Size})_{ij} - \bar{X}_{\ldots} + \beta_{11j}(\text{City Size Missing})_{ij} + \beta_{12j}(\text{Prior Employment Status})_{ij} + \beta_{13j}(\text{Job Tenure})_{ij} + \beta_{14j}(\text{Survey Wave 1})_{ij} + \beta_{15j}(\text{Survey Wave 2})_{ij} + \beta_{16j}(\text{Job Found via Networks} \times \text{Private Sector})_{ij} + \beta_{17j}(\text{Job Found via Networks} \times \text{Logged Work Place Size})_{ij} - \bar{X}_{\ldots} + r_{ij}, \]

The level-2 model for this model is the same as in equations [6.2] and [6.3]. Results for Model 2 (see Table 6.2) show that the use of personal networks in the public sector does not have a statistically significant effect on the logged wages. The logged wages for jobs found through non-network methods are higher in the private sector than in the public sector by 0.266 units. Private sector jobs found through personal networks pay even higher wages: the logged wages in the private sector are 0.106 units higher if a new job is found through personal ties than if it were found through other methods of search, net of other effects. The findings are consistent with hypothesis 6.3. Controlling for sector, larger organizations pay higher wages for jobs found through non-network methods of search: a one unit increase in the work place size increases the logged wages by 0.054 units, net of other effects. The interaction between network use and logged work place size is in the expected direction (the coefficient is estimated to equal -0.014), but it is not
statistically significant. That is, the results are not consistent with hypothesis 6.4. Neither smaller nor larger size organizations reward the use of networks through higher wages.

In the next step, I test whether the two interaction effects vary by region in a random fashion. In Model 3, the level-1 equation remains the same as in [6.4], but the level-2 equations are now:

\[
\beta_{0j} = \gamma_{00} + \gamma_{01}((\text{Logged Regional Economic Performance Index})_j - \bar{W}_.) + u_{0j}, \quad [6.5]
\]

\[
\beta_{pj} = \gamma_{p0} \text{ for } 0<p<17. \quad [6.6]
\]

\[
\beta_{17j} = \gamma_{170} + u_{17j}, \quad [6.7]
\]

\[
\beta_{18j} = \gamma_{180} + u_{18j}, \quad [6.8]
\]

The coefficient for the interaction between the private sector and network use in job search is now slightly lower (0.093 in this Model vs. 0.106 in Model 2), and it has lost its statistical significance (the standard error in this model is also slightly larger than in Model 2). According to this model, in a typical region (one with a random regional variance of zero), the positive effect of network use in the private sector on logged wages is not statistically significant, holding other effects constant. The estimated random regional variance for this interaction is 0.009; it is not, however, statistically significant. That is, the wage returns to network use in the private sector do not vary across regions, which means neither hypothesis 6.5 nor hypothesis 6.7 regarding the effect of regional economic performance on these returns is supported.

The coefficient for the interaction between logged work place size and network use in job search remains negative and not statistically significant. The estimated random
regional variance for the interaction between logged work place size and network use in job search, however, is statistically significant at the 0.05-level, even though its estimated value is nearly zero (0.001). Given the presence of regional variation in this interaction, my next step is to test hypotheses 6.6 and 6.8. The level-1 equation for Model 4 remains the same as equation [6.4]. The level-2 equations are

\[ \beta_{0j} = \gamma_{00} + \gamma_{01}((\text{Logged Regional Economic Performance Index})_j - \bar{W}) + u_{0j}, \]  

[6.9]

\[ \beta_{pj} = \gamma_{p0} \text{ for } 0 < p < 18. \]  

[6.10]

\[ \beta_{18j} = \gamma_{180} + \gamma_{181}((\text{Logged Regional Economic Performance Index})_j - \bar{W}) + u_{18j}, \]  

[6.11]

Note that the interaction between network use and private sector is fixed in this model. Results in Model 4 show that the random regional variance in the wage returns to network use by logged work place size has been reduced by about 60% to a value of 0.00046. Nevertheless, the logged regional economic performance does not have a statistically significant effect on this variable. Therefore, the results do not lend support for either hypothesis 6.6 or hypothesis 6.8.

Given the findings in Model 4, the best fitting model must be the one in which the interaction term between network use and private sector is not allowed to vary across regions, while the interaction between network use and logged work place size is allowed to vary across regions randomly. Estimates for such a model are presented in Model 5, Table 6.3. The interaction between network use and logged work place size is not statistically significant and random regional effect, though statistically significant, is very
small in absolute value (it is less than one tenth of a percent of a standard deviation in logged work place size). Under the circumstances, excluding the interaction between network use and logged work place size may produce a more parsimonious model with the same explanatory power. The estimates for such a model are presented in Model 6, Table 6.3. Looking at the BIC values, Model 6 does appear to be more efficient and, thus I accept it as the best fitting model. According to this model, the private sector pays higher wages than the public sector. Furthermore, finding a new job through personal networks in the private sector is associated with getting paid higher wages, while no relationship between network use and wages is observed in the public sector. Smaller organizations pay lower wages and neither smaller nor larger organizations reward employees for finding jobs through personal connections. Regional economic performance affects wages positively, but it does not affect the wage returns to network use in the private sector or smaller size organizations as I expected.

Summary

In this chapter, I have explored the effect of the regional economy on the link between personal network use in job search and stratification outcomes such as wages for jobs found in the private sector and for jobs found in smaller size organizations. While I find that the private sector pays higher wages than the public sector and that even higher wages are paid if a new job in the private sector is found through personal ties, the latter relationship does not exist in the public sector. Smaller organizations pay lower wages than do larger organizations. Neither smaller nor larger organizations reward personal
network use in job search. Regional economic performance affects wages positively, while unemployment does not have an effect on wages. Returns to network use in the private sector and small size organizations do not vary by region in this data set.
Table 6.2. Hierarchical Linear Regression for Logged Wages.

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
<th>Model 3</th>
<th></th>
<th>Model 4</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>SE</td>
<td>Coefficient</td>
<td>SE</td>
<td>Coefficient</td>
<td>SE</td>
<td>Coefficient</td>
<td>SE</td>
</tr>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>7.116***</td>
<td>0.109</td>
<td>7.111***</td>
<td>0.117</td>
<td>7.099***</td>
<td>0.118</td>
<td>7.705***</td>
<td>0.072</td>
</tr>
<tr>
<td>Job Found via Networks</td>
<td>0.021</td>
<td>0.028</td>
<td>0.038</td>
<td>0.093</td>
<td>0.045</td>
<td>0.093</td>
<td>0.0443</td>
<td>0.093</td>
</tr>
<tr>
<td><strong>Job Level Controls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman</td>
<td>-0.439***</td>
<td>0.029</td>
<td>-0.439***</td>
<td>0.029</td>
<td>-0.437***</td>
<td>0.029</td>
<td>-0.437***</td>
<td>0.029</td>
</tr>
<tr>
<td>CP Member in 1991</td>
<td>0.050</td>
<td>0.051</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CP Membership Missing</td>
<td>0.168</td>
<td>0.363</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VUZ Degree</td>
<td>0.283***</td>
<td>0.036</td>
<td>0.284***</td>
<td>0.036</td>
<td>0.284***</td>
<td>0.036</td>
<td>0.284***</td>
<td>0.036</td>
</tr>
<tr>
<td>SSUZ Degree</td>
<td>0.074*</td>
<td>0.034</td>
<td>0.075*</td>
<td>0.034</td>
<td>0.073*</td>
<td>0.034</td>
<td>0.074*</td>
<td>0.034</td>
</tr>
<tr>
<td>Incomplete Secondary Education</td>
<td>-0.271***</td>
<td>0.071</td>
<td>-0.274***</td>
<td>0.071</td>
<td>-0.274***</td>
<td>0.071</td>
<td>-0.275***</td>
<td>0.071</td>
</tr>
<tr>
<td>Age Centered at 18</td>
<td>-0.006***</td>
<td>0.002</td>
<td>-0.006***</td>
<td>0.001</td>
<td>-0.006***</td>
<td>0.001</td>
<td>-0.006***</td>
<td>0.001</td>
</tr>
<tr>
<td>Logged City Size(^a)</td>
<td>0.048***</td>
<td>0.008</td>
<td>0.048***</td>
<td>0.008</td>
<td>0.048***</td>
<td>0.008</td>
<td>0.048***</td>
<td>0.008</td>
</tr>
<tr>
<td>City Size Missing</td>
<td>-0.157*</td>
<td>0.052</td>
<td>-0.157*</td>
<td>0.052</td>
<td>-0.161*</td>
<td>0.052</td>
<td>-0.159*</td>
<td>0.052</td>
</tr>
<tr>
<td>Prior Status is Employed</td>
<td>0.122***</td>
<td>0.030</td>
<td>0.125***</td>
<td>0.030</td>
<td>0.124***</td>
<td>0.030</td>
<td>0.125***</td>
<td>0.030</td>
</tr>
<tr>
<td>Job Tenure</td>
<td>0.010*</td>
<td>0.004</td>
<td>0.009*</td>
<td>0.004</td>
<td>0.010*</td>
<td>0.004</td>
<td>0.010*</td>
<td>0.004</td>
</tr>
<tr>
<td>Survey Wave 1</td>
<td>-0.134***</td>
<td>0.034</td>
<td>-0.133***</td>
<td>0.034</td>
<td>-0.137***</td>
<td>0.034</td>
<td>-0.134***</td>
<td>0.034</td>
</tr>
<tr>
<td>Survey Wave 2</td>
<td>-0.085**</td>
<td>0.033</td>
<td>-0.082**</td>
<td>0.033</td>
<td>-0.085**</td>
<td>0.033</td>
<td>-0.083**</td>
<td>0.033</td>
</tr>
<tr>
<td><strong>Sector and Work Place Size Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job is in Private Sector</td>
<td>0.321***</td>
<td>0.032</td>
<td>0.266***</td>
<td>0.043</td>
<td>0.268***</td>
<td>0.043</td>
<td>0.267***</td>
<td>0.043</td>
</tr>
<tr>
<td>Sector Missing</td>
<td>0.514</td>
<td>0.283</td>
<td>0.510</td>
<td>0.283</td>
<td>0.508</td>
<td>0.282</td>
<td>0.512</td>
<td>0.282</td>
</tr>
<tr>
<td>Logged Work Place Size(^a)</td>
<td>0.045***</td>
<td>0.009</td>
<td>0.054***</td>
<td>0.013</td>
<td>0.054***</td>
<td>0.013</td>
<td>0.054***</td>
<td>0.013</td>
</tr>
<tr>
<td>Work Place Size Missing</td>
<td>-0.110*</td>
<td>0.044</td>
<td>-0.107*</td>
<td>0.044</td>
<td>-0.107*</td>
<td>0.044</td>
<td>-0.108*</td>
<td>0.044</td>
</tr>
</tbody>
</table>

Continued
<table>
<thead>
<tr>
<th>Interactions</th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
<th>Model 3</th>
<th></th>
<th>Model 4</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>SE</td>
<td>Coefficient</td>
<td>SE</td>
<td>Coefficient</td>
<td>SE</td>
<td>Coefficient</td>
<td>SE</td>
</tr>
<tr>
<td>Network*Private Sector</td>
<td>-</td>
<td>-</td>
<td>0.106*</td>
<td>0.056</td>
<td>0.093</td>
<td>0.060</td>
<td>0.103*</td>
<td>0.057</td>
</tr>
<tr>
<td>Network*Logged Work Place Size</td>
<td>-</td>
<td>-</td>
<td>-0.014</td>
<td>0.017</td>
<td>-0.016</td>
<td>0.017</td>
<td>-0.017</td>
<td>0.018</td>
</tr>
</tbody>
</table>

**Fixed Level-2 Effects**

**Intercept**:

- Logged Regional Economic Performance Index
  - 0.377*** 0.083
- Network*Logged Work Place Size Slope
  - Logged Regional Economic Performance Index
    - - - - - - - - 0.004 0.017

**Regional Random Effects**:

- Intercept
  - 0.026*** 0.027*** 0.029*** 0.027***
- Network*Private Sector Slope
  - - - 0.009 -
- Network*Logged Work Place Size Slope
  - - 0.001* 0.0005*

**Job-Level Random Effect**

- 0.389 0.388 0.384 0.386

**Number of Observations**

- 2115 2115 2115 2115

**BIC**

- 4225.0 4221.5 4256.4 4242.5

*a Centered around grand mean  
*b One-tailed test.
Table 6.3. Hierarchical Linear Regression for Logged Wages: Selecting Final Model.

<table>
<thead>
<tr>
<th></th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>SE</td>
</tr>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>7.705***</td>
<td>0.072</td>
</tr>
<tr>
<td>Job Found via Networks</td>
<td>0.045</td>
<td>0.124</td>
</tr>
<tr>
<td><strong>Job Level Controls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman</td>
<td>-0.438***</td>
<td>0.029</td>
</tr>
<tr>
<td>VUZ Degree</td>
<td>0.284***</td>
<td>0.036</td>
</tr>
<tr>
<td>SSUZ Degree</td>
<td>0.074*</td>
<td>0.034</td>
</tr>
<tr>
<td>Incomplete Secondary Education</td>
<td>-0.275***</td>
<td>0.071</td>
</tr>
<tr>
<td>Age Centered at 18</td>
<td>-0.006***</td>
<td>0.001</td>
</tr>
<tr>
<td>Logged City Size</td>
<td>0.048***</td>
<td>0.008</td>
</tr>
<tr>
<td>City Size Missing</td>
<td>-0.159*</td>
<td>0.052</td>
</tr>
<tr>
<td>Prior Status is Employed</td>
<td>0.125***</td>
<td>0.030</td>
</tr>
<tr>
<td>Job Tenure</td>
<td>0.010**</td>
<td>0.004</td>
</tr>
<tr>
<td>Survey Wave 1</td>
<td>-0.135***</td>
<td>0.034</td>
</tr>
<tr>
<td>Survey Wave 2</td>
<td>-0.083***</td>
<td>0.033</td>
</tr>
<tr>
<td><strong>Sector and Work Place Size Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job is in Private Sector</td>
<td>0.267***</td>
<td>0.043</td>
</tr>
<tr>
<td>Sector Missing</td>
<td>0.512</td>
<td>0.282</td>
</tr>
<tr>
<td>Logged Work Place Size</td>
<td>0.054***</td>
<td>0.013</td>
</tr>
<tr>
<td>Work Place Size Missing</td>
<td>-0.107*</td>
<td>0.044</td>
</tr>
<tr>
<td><strong>Interactions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network*Private Sector</td>
<td>0.102*</td>
<td>0.057</td>
</tr>
<tr>
<td>Network*Logged Work Place Size Missing</td>
<td>-0.018</td>
<td>0.019</td>
</tr>
<tr>
<td><strong>Fixed Level-2 Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logged Regional Economic Performance Index</td>
<td>0.373***</td>
<td>0.083</td>
</tr>
<tr>
<td><strong>Regional Random Effects:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.027***</td>
<td></td>
</tr>
<tr>
<td>Network*Private Sector Slope</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Network*Logged Work Place Size Slope</td>
<td>0.0005*</td>
<td>-</td>
</tr>
<tr>
<td><strong>Job-Level Random Effect</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Observations</td>
<td>2115</td>
<td></td>
</tr>
<tr>
<td>BIC</td>
<td>4234.8</td>
<td></td>
</tr>
</tbody>
</table>

*Centered around grand mean  
*b One-tailed test.
CONCLUSION

The primary objective of this dissertation has been to fill the gaps in existing social capital research by answering the question of how the regional conditions in which labor markets operate influence the use of personal ties in job search and labor market outcomes. The second objective of this project has been to contribute a theoretical framework and empirical findings to the debate on the causes of increased social network use in the Russian labor market in the post-Soviet period. To accomplish these tasks, I developed and tested a set of hypotheses about the effect of macro-economic and institutional factors on network use in job search in Russia.

My analysis advances the literature on network use in the labor market by examining network use in job search, as well as labor market outcomes associated with network use in job search. This examination makes use of a unique data set, published by Goskomstat (the State Statistical Committee of the Russian Federation), that combines individual job history data collected by the Survey of Social Dynamics and Migration in Russia (SSMDR) with regional macro-economic data, collected over a seventeen year time span, that captures both Soviet and post-Soviet periods across 40 of the 79 regions of the country. I used cross-classified hierarchical models to show in a simultaneous analysis of individual and regional data how variations in macro-level context across both time and space affect network use in job search and how regional variations affect the labor market outcomes of network use in job search.
Findings and Methodological Issues

Three sets of analyses were conducted in this dissertation. The first and main question of this study is what accounts for the temporal and regional variation in personal network use in the Russian labor market from 1985 to 2001. In the second set of analyses, I explored how regional economic performance and regional unemployment affect workers’ chances of using personal networks to gain jobs in the private sector and small organizations. In the third set of analyses I investigated how regional economic performance and unemployment affect wages for jobs found through personal networks in the private sector and in smaller size organizations.

In the first set of analyses reported in Chapter 4, I tested three existing explanations of the increased significance of network ties in the labor market in Russia since the beginning of the market reforms: the Soviet legacy approach, the institutional vacuum perspective, and the social capitalism approach. Here I also examined how differences in the regional economy and institutional setting impact the use of network ties in job search. I used hierarchical binomial regression with crossed random errors to estimate the effect of macro-level factors on personal network use in job search, net of various job-level characteristics. Examining the temporal pattern of increasing significance of social ties in job search, I found that the post-Soviet increase in the chances of finding a job through personal connections can be explained by the growth of the private sector. These results are consistent with the social capitalism perspective.

Some hypotheses related to the temporal dynamics of network use in job search were not tested due to a multicollinearity effect in the temporal data. Indeed, during the
Russian Federation’s transition to a market based economy from 1992 to 2001 growth of the private sector was highly correlated with growth of the small business sector, as well as with growth of unemployment and decrease in economic performance. In the years that followed that period, however, Russia experienced economic growth, rising in real wages, and a decreasing unemployment rates, while its private and small business sectors continued to grow. Conducting analyses similar to the ones I presented in this thesis, but on a future data set that spans a wider time period, will allow a more complete analysis of the effects of privatization on network use in job search. Such an expanded dataset would also be necessary to thoroughly disentangle the roles played by the temporal dynamics of economic performance, unemployment, and small business sector with respect to the ups and downs of network use.

My analysis of temporal dynamics could also be improved if direct measures of the institutional vacuum experienced by employers were incorporated in the models. Such measures are not easy to obtain and would require, perhaps, a survey of employers in the regions in addition to the survey of workers. Controlling for direct measures of institutional vacuum as experienced by employers may not necessarily lead to changes in the effects of privatization, but it may explain the remaining random temporal variance in network use in the Russian labor market, because the effects of institutional vacuum and the effects of institutional change are not necessarily mutually exclusive.

At the regional level in this analysis, I found that the chances of finding a new job through personal ties were higher in the regions with larger small business sectors.
and in the regions with lower economic performance, net of other effects. Neither the region’s private sector size, nor the region’s unemployment rate has an effect on network use. It is puzzling why private sector size is so important in accounting for temporal dynamics in network use but not in accounting for regional variation. One possible explanation is that the change in the private sector size over time is more dramatic than the differences between regions. The range of the values for the private sector size is greater across time (from 0% in 1985 to 46% in 2001) than across regions (from 7% below the annual national mean to 10% above the annual national mean).

In Chapter 5, I explored how regional context affected the chances of finding a job through social ties in the private sector and in smaller size firms. Here I also used cross-classified hierarchical regression to model cross-level interactions of regional economic performance index and regional unemployment rate with network use. The models included job-level, as well as regional and temporal controls. The analysis showed that social networks do lead to employment in the private sector. This relationship is positively affected by the regional economic performance index, which is consistent with the view that in prosperous regions high levels of entrepreneurial activities lead to increased chances of finding private sector jobs through personal ties. At the same time, regional unemployment rate does not appear to have an effect on the relationship between network use and getting a private sector job. The findings also indicate that regional economic performance increases the likelihood of finding a private sector job through networks, but does so at a diminishing rate.
In the work place size analysis, I found that social ties also lead to jobs in organizations of smaller size. This relationship does not vary by region, however. Perhaps the effect of network use on the size of the new work place does not vary across regions because smaller size firms are highly vulnerable to dissolution due to limited resources and are compelled to rely on networks to minimize their hiring costs in regions with booming economies as well as in regions experiencing economic recession. Most likely, regional economic conditions affect the number of small size businesses and the number of vacancies they offer rather than the extent of network use in the hiring process. It is also possible that the sample of new jobs used in this analysis does not include a sufficient number of new jobs in small organizations to capture reliably the regional variation in the network use effect on the size of the new work place reliably. Future studies may consider oversampling new jobs in smaller size organizations to overcome this problem.

In Chapter 6, I explored the effect of the regional economy on the link between personal network use in job search and stratification outcomes such as wages for jobs found in the private sector and for jobs found in smaller size organizations. Here the dependent variable is logged wages received by respondents at the time of the survey. I use two-level hierarchical linear regression to estimate regional variation in the effects on these wages of interactions for private sector and work place size with network use. I found that the private sector pays higher wages than the public sector and that even higher wages are paid if a job in the private sector is found through personal ties, while no relationship between network use and logged wages exist in the public sector.
Smaller organizations pay lower wages than do larger organizations. Neither smaller nor larger organizations remunerate personal network use in job search. Returns to network use in the private sector and small size organizations do not vary by region in this data set.

Null findings with regard to the regional variation in the effect of network use on wages are somewhat expected. A large body of literature on social network use in the labor market documents a strong link between wages and various characteristics of the social ties through which a job is found, characteristics that are neglected in the present study. If regional economy does not have an impact on the effect of network use on wages, perhaps it has an impact on the link between tie characteristics and wages. Unfortunately, the present study cannot be extended to conduct such analyses, because the SSMDR dataset does not contain any information about the type of tie used to find a job, the occupational status of the person assisting with the job search, the kind of help received, or other characteristics of the tie. In the future, researchers may want to examine how macro-level context influences the link between wages and various characteristics of the social ties used to find jobs.

It is worth noting that my study uses regions as spatial units of analysis which may not represent meaningful geographical boundaries of local labor markets. In fact, the large size, in terms of both territory and population, of many Russian regions implies a high degree of heterogeneity in the economic and labor market conditions within their borders. The choice of regions as level-2 units in this study was dictated
mainly by resource constraints. Future studies may benefit from investing in macroeconomic data on a more local scale at, for example, the district or city level.

Another caveat of this study is that none of the macro-level measures are sensitive to occupation and industry. Any sample of new jobs is likely to have a selection bias with more jobs coming from occupations and industries that experience growth. That is, a sample of new jobs from a region experiencing economic decline and high unemployment rates would contain jobs mostly from occupations and industries with stable financial in-flow and demand for labor. Hence some disconnect may exist in the experiences of the macro-level conditions experienced by an average employer in the region and by an average employer in the sample of the new jobs from that region. Future studies may consider addressing this issue.

Discussion

Organizational theory, in general, emphasizes the importance of the environment in which an organization is embedded for understanding the underlying processes, structures, and outcomes of organizational activities (Pfeffer 1982; Scott 1987). A number of scholars have pointed out that economic activities are embedded in historical and geographic context (Clark, Gertle, and Whiteman 1986; Mizruchi, Stearns, and Marquis 2006), and a number of studies have provided evidence that macro-level context has a significant impact on the way social capital works in the labor market (Bian 1997; Brown 2000; De Graaf and Flap 1988; Jenkins et al. 1983; Korpi 2001; Watanabe 1987). Nevertheless, research on social capital and job search rarely conducts direct empirical tests of how the macro-level context in which job searches take place
influences network use in job search. This dissertation fills the gap in social capital research by conducting a systematic study of how regional conditions in which labor markets operate influence the use of personal ties in job search.

One main implication of the results presented in this dissertation is that macro-level factors such as the size of the private sector, the size of the small business sector, and the state of the economy are crucial in determining the chances of finding a job through social networks. The assumption of spatial and temporal homogeneity in the use of personal ties in the labor market is not realistic. My findings suggest that contextual heterogeneity is responsible for a significant part of the unexplained diversity in social capital use in the labor market. Future studies would benefit from systematically identifying the economic and institutional factors that affect network use in labor markets by taking large samples of higher level units such as countries, states, regions, provinces, cities, and so on.

Furthermore, my results clearly show that predictions of full labor market closure made by the proponents of the Soviet legacy perspective are not substantiated by empirical tests. Organizational experience received by managers under the conditions of the centrally planned economy does not appear to prevent Russian employers from becoming social capitalists any more than it does their Western counterparts. My findings also show that there is great variability in network use in Russia not only across time, but also across regions. This is not consistent with the Soviet legacy argument which implies some kind of a uniform influence of the Soviet era experience on post-Soviet experiences across the entire country. Moreover, network
use varies from region to region in a non-random fashion, which indicates that Russian employers respond to changing local economic and institutional realities rather than reproduce the norms of the Soviet past. My findings suggest that moving beyond the Soviet legacy paradigm to a modern understanding of the role social capital plays in the job matching process would provide a deeper insight into the workings of social capital in the Russian labor market.
Hello! All-Russian Center for Public Opinion Research invites you to participate in a mass survey about issues important to our society.

When answering the questions, please rely only on your own opinion. Our country’s public opinion, which our center studies, is made of the opinions of separate individuals.

Answering the questions is not difficult. When you see several possible answers to a question, please read all of them carefully, then choose one or several answers that match your opinion the most and circle the corresponding numbers. If the answers from which you can choose are not offered or if none of the answers fit your opinion, please write your own answer in the space provided.

Thank you for your participation in the survey!

**ATTENTION! PLEASE READ INSTRUCTIONS IN BOLD ITALIC FONT WITHIN THE TEXT OF THE INTERVIEW! THIS WILL HELP YOU IN FILLING OUT THE QUESTIONNAIRE.**

**FIRST, A FEW QUESTIONS ABOUT YOU AND YOUR FAMILY**

**Q1. What is your sex?**

1. Male
2. Female

**Q2. How old are you?**
Q3. What kind of education do you have? (Please select only one degree—he highest of all you have ever completed.)
   1. Elementary or incomplete secondary education
   2. Completed secondary education
   3. Vocational training with incomplete secondary education (completed FZU, PTU, RU, SPTU that do not award complete secondary education certificate)
   4. Vocational training with completed secondary education (completed PTU, SPTU that award secondary education certificate)
   5. Specialized secondary education (completed technical, military, teaching, medical, or other college, except for those that award diploma of incomplete higher education)
   6. Incomplete higher education (completed 3-4 years of VUZ before 1991 or 2-3 years after 1991; completed college that awards diploma of incomplete higher education)
   7. Higher education (completed one/two VUZs—institute, university, academy)

T1. Would you please tell us if you were a member of the Communist Party (before 1991)? If “yes,” were you a common member in 1991, did you hold an elected position in a local party organization on a voluntary basis (without pay), or did you hold a paid position as a party staff?
   1. I have never been a member of KPSS
   2. I was a common party member
   3. I held an elected position in a local party organization on a voluntary basis (without pay)
   4. I held a paid position as a party staff

NOW WE ARE GOING TO ASK YOU TO ANSWER A FEW QUESTIONS ABOUT YOUR OCCUPATION, ABOUT YOUR JOBS, WHETHER YOU WORK CURRENTLY AND IF THIS JOB IS YOUR MAIN OCCUPATION

In case you have several jobs, please tell us about the one you consider your main occupation.

O1. Do you work (serve in the military) at the present time? If “Yes,” under what conditions do you currently work at your primary job? (Choose one answer.)
1. I do not work → Skip to quest. O1e on page 20
2. I am employed permanently (my contract has no time limit)
3. I am employed or have a contract for a specific time period or until a specific work is completed
4. I am employed based on an oral agreement
5. I serve (as enlisted or as a professional) in the army (internal affairs agencies, government security agencies)
6. I am engaged in individual labor activities or private entrepreneurship which do not involve employment of others
7. I am a business/farm owner, entrepreneur and I employ others (besides non-paid family members)
8. Other (please explain) __________

O1a. Do you only work, or are you also a student or a retiree?

1. I work only
2. I work and study
3. I am a working retiree

In what year and month did you start your current job/business?

_______ month (in numbers)
_______ year (full number)

T3. How did you find your current job? (Choose one answer)

1. Through state unemployment services
2. Through a private employment agency
3. Through relatives (friends, acquaintances)
4. Through advertisement in a newspaper (on the radio, TV, etc.)
5. Received an offer by personally visiting firms’ human resource departments
6. Received an offer by sending my resume to a firm; got transferred upon recommendation
7. Got transferred to my current job/position at the same firm
8. By winning a competition this firm announced
9. Was able to engage in individual work activities
10. Other (please explain) __________

R1. In what occupation and at what position do you currently work? What kind of work do you do? (Describe with as many details as possible.)
O6. What was your income from your primary job in the last month, including bonuses, paid vacation and other payments (after taxes)? (Please convert income in foreign currency into rubles according to the current exchange rate.)

About _____________ rubles
9  I did not have any income

ATTENTION! If you engaged in individual labor activities or private entrepreneurship that does not involve employment of other workers (answer “6” to the q. O1 on page 16), please skip to q. T6 on page 20. Others please start with question O3.

O4. What type of organization is the firm/organization where you hold your primary job? (Choose one answer)

1. State or municipal company, budget organization, including a military unit, governing body → Skip to q. T5 on the next page
2. Company with limited responsibility (OOO)
3. Closed or open joint-stock company (ZAO or OAO) without foreign capital involved
4. Closed or open joint-stock company (ZAO or OAO) with foreign capital involved
5. Closed or open joint-stock company based on collective, state farm or forestry (ZAO or OAO)
6. Cooperative, farm, business that is not registered legally
7. Public and/or nonprofit organization – foundation, political party, social movement organization, trade union, religious organization, etc. → Skip to q. T5 on the next page
8. Other (please explain) _____________________

T4. If your primary job was in a state-owned organization at the time you started working there, in what year and month was it privatized?

_____________ month (in numbers)
_____________ year (full number)
9998 The state did not own this organization (it was a collective or a state farm)
9999 Don’t know, don’t remember
T5. How many people work in the organization/firm where you now work?

1. Up to 20
2. 21-50
3. 51-200
4. 201-500
5. 501-1000
6. More than 1000
7. Don’t know

ATTENTION! After answering question O7c, skip to question T6 on the next page. We ask that only those who currently do not have a job (answer “1” to question O1 on page 16) answer question O1e.

O1e. What is your main occupation? (Choose one answer.)

1. Full-time student at a secondary school, vocational school, college, university, etc.
2. Retired
3. Disabled
4. Homemaker
5. On maternity leave
6. Unemployed. I do not work but I’m looking for a job
7. Not employed. I do not work and do not search for a job
8. Other (please explain) ______________________________

T6. How many permanent jobs, including your current job, have you had in your entire life? Please count all enterprises and organizations where you were employed.

1. One
2. Two
3. Three
4. Four
5. Five
6. Six
7. Seven
8. Eight
9. Nine
10. Ten
11. More than 10
12. None (never [have not yet] had a job or worked part-time at my first job)
THANK YOU VERY MUCH! Please give the questionnaire to the interviewer.

ATTENTION INTERVIEWER! Proceed with questions T7-T36 on pages 25-43 in an interview mode

WE WOULD LIKE TO ASK YOU ABOUT YOUR LIFE IN THE PERIOD SINCE THE END OF 1984 TO THE PRESENT TIME

T7. What was your primary occupation in December 1984? (Show respondent card # 1, one choice.)

1. Worked
2. Went to school
3. Went to a VUZ, SSUZ, vocational school
4. Was on pregnancy or maternity leave
5. Served in the army
6. Was retired or disabled
7. Was unemployed and searched for a job
8. Did not work and did not search for a job (for example, did homemaking, prepared for VUZ, college entrance exams, etc.)
9. Was not born or was a child of pre-school age
10. Other (please explain) __________________________

Interviewer! If you talk to a woman and her response was coded as “4,” ask a clarifying question: “Did you work, study or did not work and did not study before maternity leave?”

Questions T8-T12 are only for those who worked at the end of 1984 (answer “1” to the previous question) and women who worked before their maternity leave (answer “4” to the previous question and clarification indicating that she worked or studied before maternity leave), except question T12.

The rest of the respondents should be asked question T13 on page 28.

When asking questions, choose your wording depending on whether the respondent was employed (a) or a woman who was on maternity leave (b).

T8. a) What year did you begin to work at the organization you worked for at the end of 1984?

b) What year did you begin to work at the organization you worked for before maternity leave? (Interviewer! Write down a two-digit number.)

In year _______
T11. a) How many people worked at the organization where you worked at the end of 1984?
   b) How many people worked at the organization where you worked before maternity leave?

1. Up to 20 people
2. 21-50 people
3. 51-200 people
4. 201-500 people
5. 501-1000 people
6. More than 1000 people
7. Doesn’t know, doesn’t remember

*Interviewer! Question T12 is only for those who worked at the end of 1984. Skip to question T13 for women who were on maternity leave at the end of 1984.*

T12. If since the end of 1984 you kept working for the same organization until privatization, would you please tell us if that organization was privatized? If yes, in what year and month?

_____________ month (in numbers)
_____________ year (full number)
9997 Discontinued work at the organization before Russia began privatization
9998 Organization was not privatized while I worked there since 1984
9999 Doesn’t know, doesn’t remember

T13. Now we would like to ask you about the changes in your primary occupation since the beginning of 1985 until present. Please tell us when and what changes happened following the order of the events. Please think of all your jobs and all the breaks from work that lasted for at least one month.

*(Interviewer! Show respondent card #4 and ask respondent to name the codes of the events in the order they happened in respondent’s life. Don’t forget to ask about the month and the year in which each event began.)*

*INTERVIEWER! Responses to this question should be recorded in table “Changes in the primary occupation” (see next page). Write down each event’s code from card #4 in the lines of column A and write down the month and the year in which an event took place in columns B and C correspondingly (use Arabic numbers). If any of the*
events were repeated, record them as many times as they happened in column A using the same code.

Do not circle codes in card #4 and do not mark respondent’s choices in any other way on either the questionnaire or the card).

<table>
<thead>
<tr>
<th>CARD #4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A job transfer from one organization to another (a break between the</td>
</tr>
<tr>
<td>jobs was less than one month)</td>
</tr>
<tr>
<td>2. A job transfer within the same organization (change of occupation,</td>
</tr>
<tr>
<td>position, subunit, department, etc.)</td>
</tr>
<tr>
<td>3. Began my first job (never worked before)</td>
</tr>
<tr>
<td>4. Began a new job at another organization (a break between the jobs</td>
</tr>
<tr>
<td>lasted at least one month, except if the break was for maternity leave</td>
</tr>
<tr>
<td>5. Began individual work activities or opened my own business</td>
</tr>
<tr>
<td>6. Maternity leave</td>
</tr>
<tr>
<td>7. Returned to the same organization from maternity leave</td>
</tr>
<tr>
<td>8. Returned from maternity leave to a different organization</td>
</tr>
<tr>
<td>9. Became a student at a university, college, vocational school, etc.</td>
</tr>
<tr>
<td>(full-time)</td>
</tr>
<tr>
<td>10. Joined the military</td>
</tr>
<tr>
<td>11. Searched for a job (including right after graduation or return from</td>
</tr>
<tr>
<td>the army)</td>
</tr>
<tr>
<td>12. Lost a job due to layoffs, organization’s liquidation, or other</td>
</tr>
<tr>
<td>reasons beyond my control</td>
</tr>
<tr>
<td>13. Stopped working intentionally (for homemaking, because of the</td>
</tr>
<tr>
<td>children, to get relief from stress, etc.)</td>
</tr>
<tr>
<td>14. Stopped working due to retirement or disability</td>
</tr>
<tr>
<td>15. Other (write down what the event was)</td>
</tr>
</tbody>
</table>

INTERVIEWER! If respondent did not name any of the events from card #4, circle number 15 in column “Event number” (the last line) and skip to quest. T21 on page 36.
Table “Changes in the primary occupation”

(Only one event per line can be recorded in this table!)

<table>
<thead>
<tr>
<th>Event Number</th>
<th>Event Code from CARD # 4</th>
<th>Beginning of the Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Month (number)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year (full number)</td>
</tr>
</tbody>
</table>

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

………………. ………………………… ………………………

Make sure to circle numbers in all lines (column titled ‘Event Number’) in which you have respondent’s replies.

INTERVIEWER! If there are no events coded 1, 2, 3, 4, 5, 7, or 8 in column A in table “Changes in the primary occupation,” ask respondent question T21 on page 36.

If events coded 1, 2, 3, 4, 5, 7, or 8 are present in the table, ask respondent to talk about all the jobs s/he ever held since 1985 (except the current one).

If there were several such jobs, ask respondent to talk only about the last four jobs s/he had before s/he received the current job (or stopped working at all).

First ask respondent to describe the job s/he had after the first change in her/his work life which is coded in the table as codes 1, 2, 3, 4, 5, 7, or 8.

For example, the change is written down in table “Changes in the primary occupation” in line 2. Ask respondent questions T14-T20, and write down the answers in the lines of column “First job.” Make sure to mark in gray cells of these questions the number of the line in which according to column A from table
“Changes in the primary occupation” the first of the codes 1, 2, 3, 4, 5, 7, or 8 is written down. In this case, this number will be 2.

Upon receiving respondent’s responses about the job after the first change, ask him/her questions T14-T20 about the job he had after the second change. If the second change under any of the codes among 1, 2, 3, 4, 5, 7, or 8 is recorded in the table, for example, in line 3, you have to put 3 into the gray cells for each question. Responses about the job after the second change record in columns and line under “second job.”

Responses about each of the next job have to be recorded in the same way.

Please tell us about all of your jobs since 1985, except for the one you had at the end of 1984 and the one you have currently. Let’s begin with the first one.

Interviewer! If since 1985 respondent had more than one job, ask about the second and the following jobs with the phrase “And now tell me about the next job.”

T14. Did you work at this job as an employee or was it individual work activities/private business? (Show respondent card #5; one response per corresponding column.)

<table>
<thead>
<tr>
<th></th>
<th>1st job</th>
<th>2nd job</th>
<th>3rd job</th>
<th>4th job</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worked as an employee in a state-owned or private organization</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Served in the army, agency of the internal affairs, government security agency (but not as enlisted)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Was engaged in individual work activities or private business without employees</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Worked in my own private business, farm, enterprise with employees (unpaid family members do not count as employees)</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
T16. Approximately how many people worked at this organization? (*Show respondent card #6; one choice only.*)

<table>
<thead>
<tr>
<th>Was engaged in individual work activities</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; job</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; job</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; job</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; job</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Up to 20</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>21-50</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>51-200</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2001-500</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>501-1000</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>More than 1000</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Don’t know, don’t remember</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

T17. How did you find/receive this job? (*Show respondent card #7; one response per corresponding column.*)

<table>
<thead>
<tr>
<th>Through state unemployment services</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; job</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; job</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; job</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; job</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Through a private employment agency</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Through relatives (friends, acquaintances)</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Through advertisement in a newspaper (on the radio, TV, etc.)</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Received an offer by personally visiting firms’ human resource departments</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Received an offer by sending my resume to a firm; got transferred upon recommendation</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Got transferred to my current job/position at the same firm</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>By winning a competition this firm announced</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Was able to engage in individual work activities</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Other (please explain)</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
T18. What type of organization was the organization you worked at by the time you were leaving it? (Show respondent card #8; one response per corresponding column.)

<table>
<thead>
<tr>
<th>Type of Organization</th>
<th>1st job</th>
<th>2nd job</th>
<th>3rd job</th>
<th>4th job</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was engaged in individual work activities</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>State or municipal company, budget organization, including a military unit, governing body</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Collective or state farm</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Company with limited responsibility (OOO)</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Closed or open joint-stock company (ZAO or OAO) without foreign capital involved</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Closed or open joint-stock company (ZAO or OAO) with foreign capital involved</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Closed or open joint-stock company based on collective, state farm or forestry (ZAO or OAO)</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Cooperative</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Farms, businesses that do not form a legal entity</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Public and/or non-profit organization – fund, political party, social movement, trade union, religious organization, etc.</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Privatized/public company, but I don’t know of what exactly type it is</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Other (please explain)</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Not sure</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

*Interviewer! If in the previous question any of the jobs is marked by code “2,” “3,” or “10,” do NOT ask question T19 about it. Skip right to the question T20 on the next page.*
T19. If this organization had been a state property at the time you began to work there, in what year and month was it privatized/made public (joint-stock company)?

d) first job

[ ]

__________ month (in numbers)

__________ year (full number)

9998 organization was not a state property (collective or state farm)
9999 doesn’t know, doesn’t remember

d) second job

[ ]

__________ month (in numbers)

__________ year (full number)

9998 organization was not a state property (collective or state farm)
9999 doesn’t know, doesn’t remember

d) third job

[ ]

__________ month (in numbers)

__________ year (full number)

9998 organization was not a state property (collective or state farm)
9999 doesn’t know, doesn’t remember

d) fourth job

[ ]

__________ month (in numbers)

__________ year (full number)

9998 organization was not a state property (collective or state farm)
9999 doesn’t know, doesn’t remember
Interviewer! Question T21 is for everybody.

Now we would like to ask a few questions about places in which you have lived since the end of 1984 and to present.

T21. First, please tell us how many different places of residence (different cities, towns, villages), including your current one, did you live in for over six months during this period? If you left a town (city, village) after living there for six months and then came back after living in another town (city, village) for over six months, please count this town (city, village) twice.

1. In one
2. In two
3. In three
4. In four
5. In five
6. More than 5

Interviewer! If respondent chose “1” (“in one”), do not ask question T22. Instead, write down in the lines the name of the oblast'/autonomous republic of RF of the town (city, village) where you do the interviews. To the others please ask the question T22.

T22. In what oblast’ (krai) or autonomous republic of the Russian Federation (RSFSR) did you live at the end of 1984? If you lived in one of the republics of the former USSR or any other country, please name it. (Write down the name.)

_______________________ oblast’, krai/autonomous republic of RF (RSFSR)
_______________________ republic of the former USSR
_______________________ other country

Interviewer! Ask respondents who have had only one place of residence questions T23 and T24 as they are in paragraph (a)); ask respondents who have had two or more places of residence these questions as they are in paragraph (b)).

T23. a) Approximately how many residents did this city (town, village) have at the end of 1984? (Show respondent card #9; one choice only)

b) Approximately how many residents did that city (town, village) where you lived at the end of 1984 have?
1. Less than 5 thousand people
2. Between 5 and 10 thousand people
3. Between 10 and 100 thousand people
4. Between 100 and 500 thousand people
5. Between 500 thousand and 1 million people
6. More than 1 million people (except for Moscow and Sankt-Peterburg/Leningrad)
7. More than 1 million people – Moscow
8. More than one million people – Sankt-Peterburg/Leningrad
9. Doesn’t know

T24. a) In what year did you make this city (town, village) your permanent residence, or did you live there since you were born?

b) In what year did you make the city (town, village) where you lived at the end of 1984 your permanent residence, or did you live there since you were born?

___________ month (in numbers) _____________ year (two last digits)

9997 lived here/there since being born

Interviewer! Questions T26-T30 are to be asked only of those respondents who lived in two or more towns (cities, villages) since the end of 1984 until present (see responses to the question T21 on page 36, positions (replies) “2-6.” Those who lived during the indicated period only in one place (position (reply) “1” to question T21), ask question T31 on page 40.

Now please tell us about each place of your residence (city, town, village) where you lived for over six months since the beginning of 1985 until present. Do not forget to tell us if you moved to study for over six months, as well as about your last move, i.e. your current place of residence.

You do not need to tell us about moving to places while you served in the armed forces or while you served time in prison if you were convicted.

Please begin with the place of your residence (city, town, village) after you moved from the place where you lived at the end of 1984.

First, ask questions T26-T30 about the first place, then, repeat them for the next place, etc. Begin questions for every next place with the phase “And now tell me about the next place of residence.” If there were more than four towns (cities, villages), ask about the last four, including the current one.
T26. In what year and month did you move into this town (city, village)?

first place of residence __________ month (in numbers) __________ year (full number)
second place of residence __________ month (in numbers) __________ year (full number)
third place of residence __________ month (in numbers) __________ year (full number)
fourth place of residence __________ month (in numbers) __________ year (full number)

T27. Was this town (city, village) in the same oblast’ (krai)/autonomous republic of Russian Federation (RSFSR), republic of the former USSR (country of CIS) as the previous town or in different? If different, please name it.

a) first town (city, village)
__________________________ oblast’ (krai)/autonomous republic of RF (RSFSR)
__________________________ republic of the former USSR (country of CIS)
999 the same oblast’ (autonomous/soviet republic, country of CIS)

b) second town (city, village)
__________________________ oblast’ (krai)/autonomous republic of RF (RSFSR)
__________________________ republic of the former USSR (country of CIS)
999 the same oblast’ (autonomous/soviet republic, country of CIS)

c) third town (city, village)
__________________________ oblast’ (krai)/autonomous republic of RF (RSFSR)
__________________________ republic of the former USSR (country of CIS)
999 the same oblast’ (autonomous/soviet republic, country of CIS)

d) fourth town (city, village)
__________________________ oblast’ (krai)/autonomous republic of RF (RSFSR)
__________________________ republic of the former USSR (country of CIS)
999 the same oblast’ (autonomous/soviet republic, country of CIS)
T28. Approximately how many residents lived in that town (city, village)? *(Show respondent card #9, one choice per corresponding column.)*

<table>
<thead>
<tr>
<th></th>
<th>1(^{st}) town a)</th>
<th>2(^{nd}) town b)</th>
<th>3(^{rd}) town c)</th>
<th>4(^{th}) town d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 thousand people</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Between 5 and 10 thousand people</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Between 10 and 100 thousand people</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Between 100 and 500 thousand people</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Between 500 thousand and 1 million people</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>More than 1 million people (except for Moscow and St. Petersburg/Leningrad)</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>More than 1 million people—Moscow</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>More than one million people—St. Petersburg/Leningrad</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Doesn’t know</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>
## APPENDIX B. PRINCIPAL COMPONENT ANALYSIS RESULTS

Table 1. Principal Component Analysis for Annual National-Level Index of Economic Performance (n=17)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor Loadings</th>
<th>Uniqueness</th>
<th>Scoring Coefficients (Regression Method)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Mean Wages</td>
<td>0.996</td>
<td>0.008</td>
<td>0.343</td>
</tr>
<tr>
<td>Annual Income per Capita</td>
<td>0.979</td>
<td>0.042</td>
<td>0.337</td>
</tr>
<tr>
<td>Annual Volume of Production</td>
<td>0.975</td>
<td>0.050</td>
<td>0.336</td>
</tr>
<tr>
<td>Eigenvalue</td>
<td></td>
<td></td>
<td>2.901</td>
</tr>
<tr>
<td>Variance Proportion</td>
<td></td>
<td></td>
<td>0.967</td>
</tr>
</tbody>
</table>

Table 2. Principal Component Analysis for Regional Index of Economic Performance (n=40)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor Loadings</th>
<th>Uniqueness</th>
<th>Scoring Coefficients (Regression Method)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Mean Wages</td>
<td>0.888</td>
<td>0.212</td>
<td>0.414</td>
</tr>
<tr>
<td>Regional Income per Capita</td>
<td>0.956</td>
<td>0.086</td>
<td>0.446</td>
</tr>
<tr>
<td>Regional Volume of Production</td>
<td>0.665</td>
<td>0.558</td>
<td>0.310</td>
</tr>
<tr>
<td>Eigenvalue</td>
<td></td>
<td></td>
<td>2.145</td>
</tr>
<tr>
<td>Variance Proportion</td>
<td></td>
<td></td>
<td>0.715</td>
</tr>
</tbody>
</table>
REFERENCES


Manzoni, Anna and Ruud Luijkx. 2007. “Employment Mobility Patterns and Its Determinants in Germany: Comparing the Reliability of Prospective and Long-Term Retrospective Data.” *RC28*, Brno, Czech Republic: Tilburg University, the Netherlands.


